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APRIL 15, 1957
VOL. 152 NO. 15

# Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

**TOUGH TERRAIN**

**A modern Robin Hood with a bow and arrow comes to the rescue of a Pacific T&T line-stringing job, "stymied" by steep canyon walls and poison oak. Shooting cord by arrow, pole to pole, enabled them to pull the line over.**

Guaranteed Circulation This Issue
11,600 of which 11,069 is Paid

MANAGEMENT • PLANT • TRAFFIC • COMMERCIAL • LEGAL • ACCOUNTING

# We don't pay extra for the extras we get with Penta-treated poles

Recently our company switched to Penta-treated poles. As division maintenance superintendent, I was anxious to find out what the crews thought about them. So I checked with Ned and his crew.

Ned said he and the boys like them because they're clean—easy to handle and easy to install. Then I mentioned that U.S. Government test records and service records of other utility companies show Penta gives outstanding long-life protection to poles. Keeps poles sound for years because it keeps rot and termites out. I told Ned it'd be a long time before he'd have to replace a Penta-treated pole.

Ned remarked that it sounded like Penta-treated poles are worth the extra money we pay for them. Actually, though, we don't pay a penny extra for the advantages we get with Penta-treated poles. They cost the same as poles treated with ordinary preservatives. THE DOW CHEMICAL COMPANY, Midland, Mich., Dept. PE500E-1.

YOU CAN DEPEND ON DOW



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# These days...

In the minds of users and makers of telephone equipment there is an exceptional degree of interest in *carrier.*

We have been hard at work in carrier research and development—and we have important news for you.

**SEE PAGES 4 AND 5**

**STROMBERG-CARLSON COMPANY**

A DIVISION OF GENERAL DYNAMICS CORPORATION

Sales Offices: Atlanta 6, Chicago 6, Kansas City 8, Rochester 3, San Francisco

# YOU PAY LESS...

## and get 7 other important advantages...

## with Stromberg-Carlson's

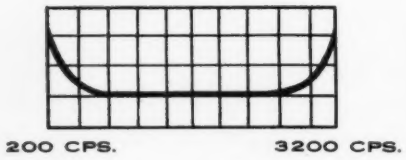
# ALL NEW "501" CARRIER

When you buy Stromberg-Carlson all new "501" Carrier, you pay 10% to 40% *less* than you would for similar equipment made by other independent manufacturers.

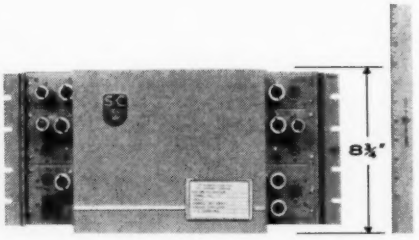
What's more, "501" Carrier gives you a combination of 7 vital benefits (see pictures at right and below).

Lowest initial cost, extra operating advantages and simple, low-cost maintenance will brighten your profit picture when you buy our all new "501" Carrier.

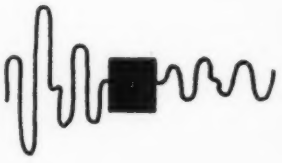
For full technical details, write or call your Stromberg-Carlson representative. Ask for your free copy of Booklet T-2014.



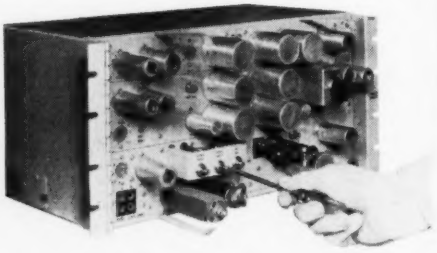

1. Toll quality frequency response: —3 db. points at 350 and 2900 cps.; —10 db. points at 200 and 3200 cps.



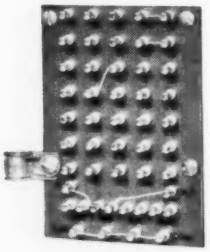

2. A unit of "501" carrier takes only 8¾ inches of rack space.



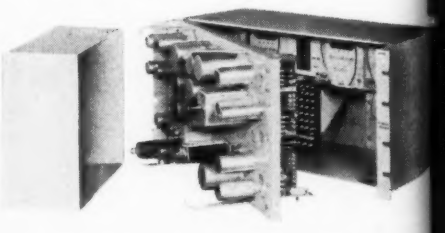
3. Voice limiters safely reduce excess voice currents that might cause unwanted relay operation.



4. Only 9 controls in the system mean simplified operation and less possibility of breakdown.



5. You can convert from ringdown to dial operation by simple wire strapping on the terminal board. There are no parts to change.



6. Units are complete and factory-wired.

**S-C STROMBERG-CARLSON COMPANY** GD

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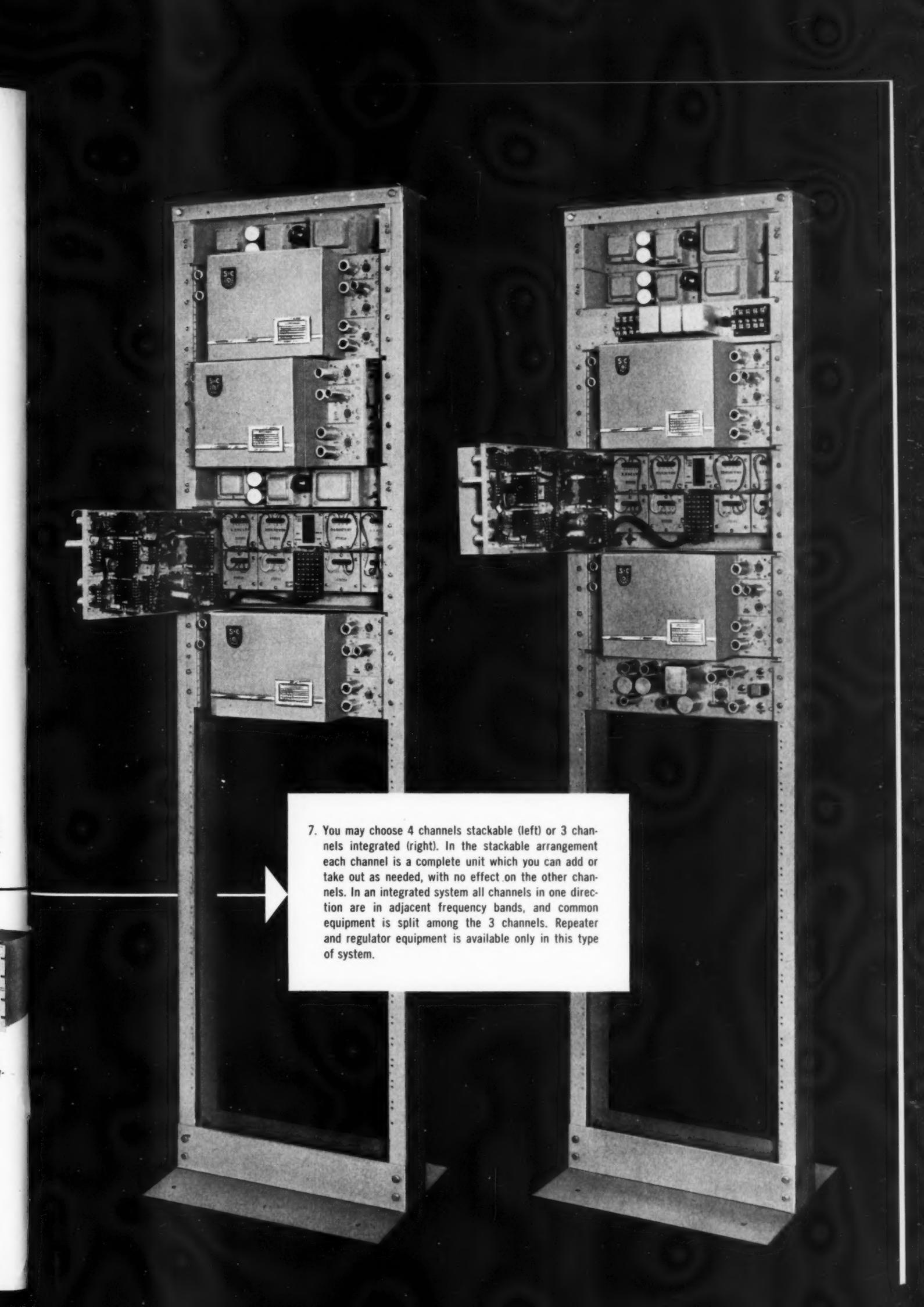
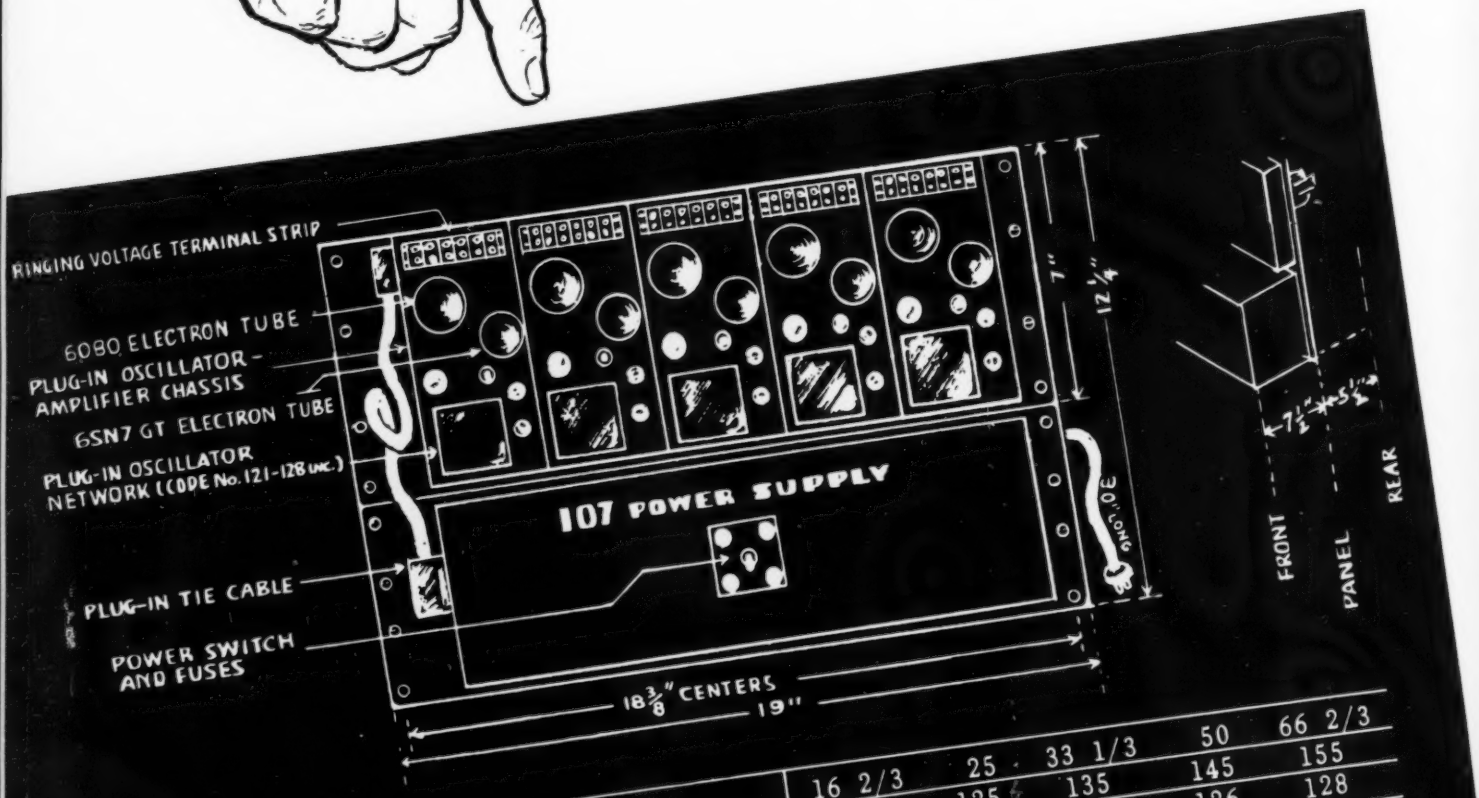


7. You may choose 4 channels stackable (left) or 3 channels integrated (right). In the stackable arrangement each channel is a complete unit which you can add or take out as needed, with no effect on the other channels. In an integrated system all channels in one direction are in adjacent frequency bands, and common equipment is split among the 3 channels. Repeater and regulator equipment is available only in this type of system.

# Modernizing? Cutting maintenance costs? Then.




| | | | | | | |
|---|---|---|---|---|---|---|
| Code No. 101 Harmonic | Frequency | 16 2/3 | 25 | 33 1/3 | 50 | 66 2/3 |
| | *Nom. Ring. Volt. | 105 | 125 | 135 | 145 | 155 |
| | Osc. Net. No. | 121 | 123 | 124 | 126 | 128 |
| Code No. 102 Synchromonic | Frequency | 16 | 30 | 42 | 54 | 66 |
| | *Nom. Ring. Volt. | 105 | 125 | 135 | 145 | 155 |
| | Osc. Net. No. | 121 | 124 | 125 | 126 | 128 |
| Code No. 103 Decimonic | Frequency | 20 | 30 | 40 | 50 | 60 |
| | *Nom. Ring. Volt. | 105 | 125 | 135 | 145 | 155 |
| | Osc. Net No. | 122 | 124 | 125 | 126 | 127 |
| Code No. 104 Special | Frequency | 20 | 30 | 42 | 54 | 66 |
| | *Nom. Ring. Volt. | 105 | 125 | 135 | 145 | 155 |
| | Osc. Net. No. | 122 | 124 | 125 | 126 | 128 |

*Voltages adjustable from values indicated.

Any combination of five ringing frequencies available on special order.

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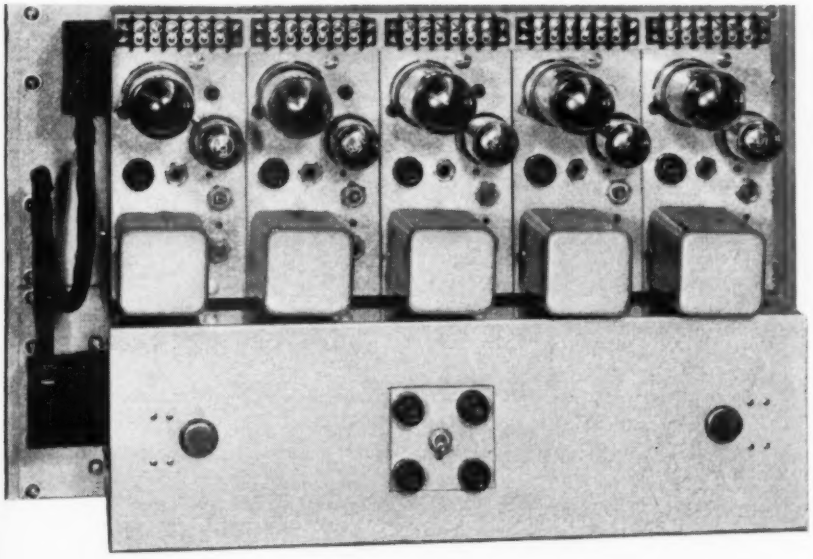
# look at the advantages of the

# KELLOGG ELECTRONIC RINGING GENERATOR



Write for your copy of the bulletin on the Kellogg Electronic Ringing Generator, today!

More and more independent telephone companies are adopting the Kellogg Electronic Ringing Generator as standard equipment. Here are a few of the many reasons:

- **LESS MAINTENANCE** . . . No moving parts . . . no contacts to clean or replace. Plug-in components . . . not damaged by shorted lines...experience proves tube life normally exceeds 18 months.
- **NO CROSS-RING PROBLEMS**...Extreme frequency stability . . . precise, easily adjustable frequencies.
- **FLEXIBILITY**...Provides any combination of 5 or fewer ringing frequencies. All ringing frequencies are independent of each other and/or frequency of power source.
- **EFFICIENT** . . . All frequencies continuously available . . . furnishes enough power for 1000 or more lines.
- **COMPACT** . . . Mounts on standard 19" relay rack...requires only 12¼" of vertical space.

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# FLASHES AND PLUGS

**A STEP FORWARD.** A news note on the continuing negotiations between parents and their sons and daughters regarding use of the family telephone, tells of the following conciliatory move by the younger generation in Toledo, Ohio:

"A teenage forum at Monroe St. Methodist Church suggested a 15-minute limit on telephone conversations by the younger set 'as one means of avoiding friction within the household.' "

•

**JUDICIAL CALM: SHATTERED.** Double-barreled coincidence threw a Beverly Hills, Cal., hotel into confusion recently, when two guests arrived, both named Arnold Rauen and both judges.

One was from Chicago and the other from Washington, D. C. They wound up getting each other's telephone calls, mail, bills, etc. One was supposed to have the use of a Cadillac while he was in town. The other got it.

The both finally checked out shaking their heads wearily. And a battery of hotel telephone operators sighed with relief when they left, reports the United Press.

•

**CASHING IN ON A PROSPECT.** Good telephone salesmen leave no stones unturned, comments AT&T's *Long Lines*. A recent example occurred when a Southwestern Bell company sales supervisor at Austin, Tex., decided to give his salesmen a Mexican dinner in appreciation of their outstanding job in selling Speakerphones.

A telephone call was made to a local cafe to arrange for reservations, but no one answered. After repeated calls to this cafe and another under the same ownership, it was determined that the two cafes were closed on Mondays. A call was then placed to the third cafe and reservations were made.

The next day the supervisor and one of his salesmen called on the owner of the cafes and told him what had happened. They sold him two automatic answering sets.

•

**STREAMLINED.** An Indian telephoned a lawyer regarding the necessary steps to be taken in order to have his name shortened legally.

"What's your name now?" asked the lawyer. "Chief Trainwhistle," said the Indian. "And what do you want to shorten it to?" pursued the legal counsel.

The Indian paused majestically and grunted, "Toots."

**CHANGE OF ADDRESS**

**Please notify your local postmaster and Circulation Dept. of TELEPHONY of change of address. Change cannot be made without the old as well as the new address. Allow three weeks for change of address to become effective.**


Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY
*Since 1901*

**April 13, 1957**


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# New Catalog No. 450 Protector

Whether the need for a single pair lightning and static drainage unit is scattered or highly localized is best known to the folks who operate the telephone plant.

The term "buffer" has been used to describe such a protective unit and the term seems to be well suited to Reliable's new Catalog Number 450. Its function is to drain lightning and static discharges from open wires that are connected to cable and reduce the voltage at the cable junction.

The new unit protects protected cable terminals and will perform in front of unprotected terminals. It is also protection for loud speakers, coils, filters and such.

Here again Reliable engineers have studied both cause and effect and have designed a protector to take care of a problem that is recognized throughout the Communications Field.

60 YEARS OF INDEPENDENT TELEPHONY 1897-1957

Reliable

RELIABLE ELECTRIC CO. • CHICAGO



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And look, Marge, All I do to ex
trunk is push the two Keyse B

# with Leich's 40A PABX

The exclusive new key pulsing turret of Leich's new 40A PABX makes sense to attendants—and to your customers. Here's why.

They want a compact PABX turret that does its job with quick efficiency. Leich's 40A turret, smaller than a typewriter, does just that. To extend an incoming call the turret attendant now only needs to key pulse two numbers to reach the inside telephone.

Here's an example: The attendant receives an incoming call from a customer for a certain salesman. If the salesman's number is 39, the attendant merely presses keyset buttons 3 and 9 in sequence.

This simple operation automatically rings the salesman's telephone and sets up the connection. So customers are seldom, if ever, kept waiting by a busy attendant. It's the most efficient PABX yet.

## More Reasons Why Leich's 40A PABX Makes Sense to Your Customers

**A.** Compact, dependable dial switchboard modeled after the famous all-relay Leich Dial System.

**B.** Capacity of up to 40 telephones with 10 trunks to the main exchange, and 6 local links.

**C.** Local links are not tied up on extension dialed calls to city trunks.

**D.** Consultation calls without help from attendant.

**E.** Standard Leich telephones are used.

**F.** Restriction of outside calls if desired.

**G.** Night answering by any telephone.

**H.** Any inside station may call outside without waiting for attendant.

LEICH

LEICH SALES CORPORATION, 427 WEST RANDOLPH STREET, CHICAGO 6, ILLI

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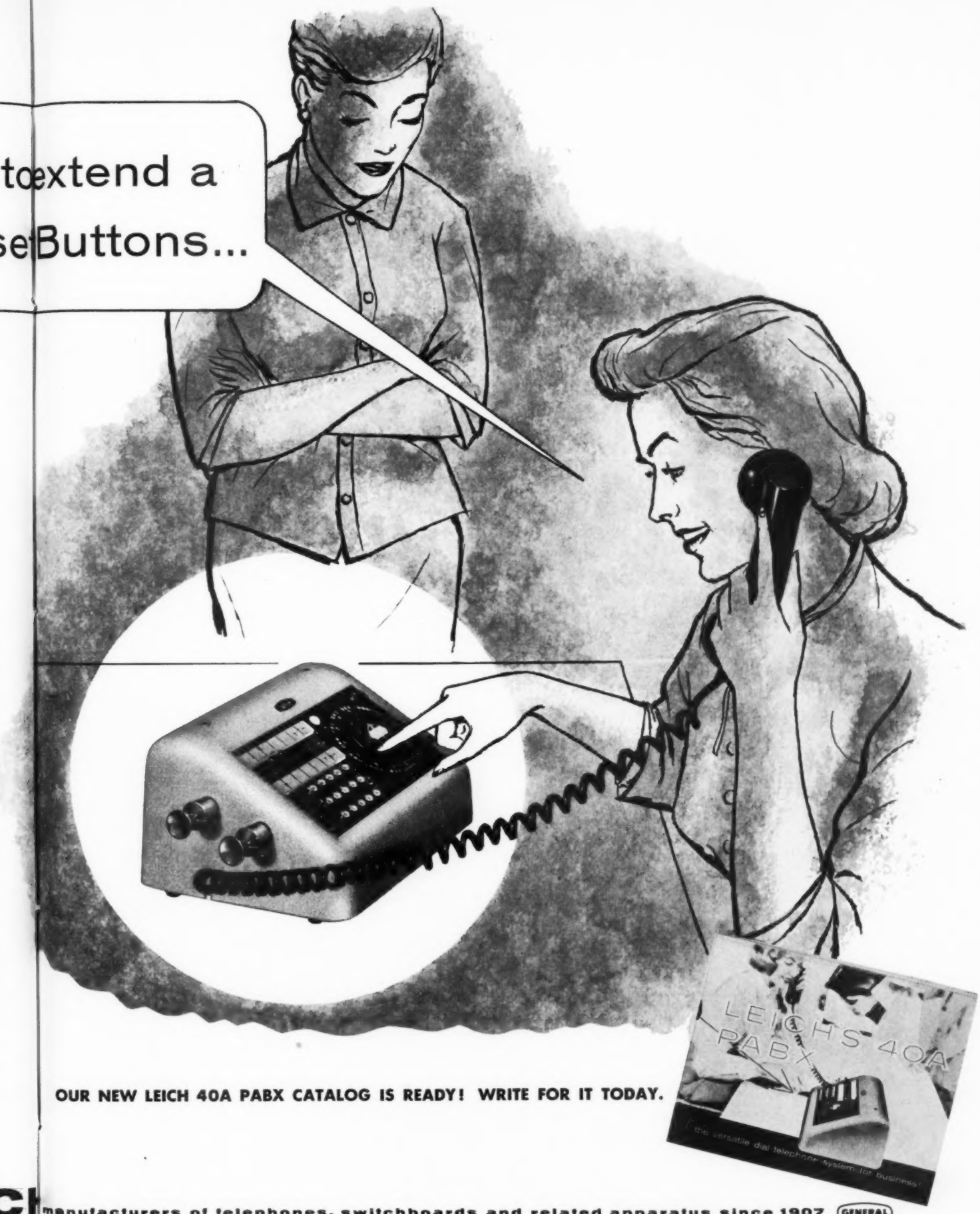


**OUR NEW LEICH 40A PABX CATALOG IS READY! WRITE FOR IT TODAY.**

**manufacturers of telephones, switchboards and related apparatus since 1907**

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GENERAL SYSTEM

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# CORDIAL CUSTOMER CONVENIENCE

Maybe you can't shake hands with every customer but you can serve them more cordially, promptly and efficiently with the new compact, space saving Customer Service Counter. Clerks always face the customer . . . never have to move around to complete bookkeeping and cashiering operations. They work effortlessly from a comfortable sitting position with everything located within arm's reach.

Most important, full time point-of-use fire protection for your vital records is now available in desk-height, certified, insulated counter units. For further information on the many other advantages of the Sectional Customer Service Counter write for FREE booklet. See below.

**Remington Rand**
DIVISION OF SPERRY RAND CORPORATION

*For free booklet SC764 write to Remington Rand, Room 1456, 315 Fourth Avenue, New York 10, New York*



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ANSONIA®

# NEW Ankoseal® PARALLEL LINE WIRE

## Answering The Call For Quality!

Ansonia's enviable reputation for quality is emphasized once again in this new product. You simply will not find parallel line wire that gives better transmission qualities and takes a beating in the open the way Ankoseal Parallel Line Wire does!

Install your span lengths to absolute maximum with a feeling of complete security even to heavy loading zones. Transposing ANKOSEAL Line Wire is simplicity itself . . . simply twist the desired number of turns between poles. Highest quality transmission characteristics can be obtained and cross talk eliminated in rural areas.

Ansonia Ankoseal Two Conductor Parallel Line Wire is available in #12 or #14 AWG in 5,000 or 15,000 foot reels.

*Insist on* ANSONIA **Ankoseal** *quality*

**THE ANSONIA WIRE & CABLE COMPANY · ASHTON · R. I.**

***The Oldest Name In Plastic Telephone Cables In The Most Modern Plant Devoted Entirely To Producing Plastic Cables***



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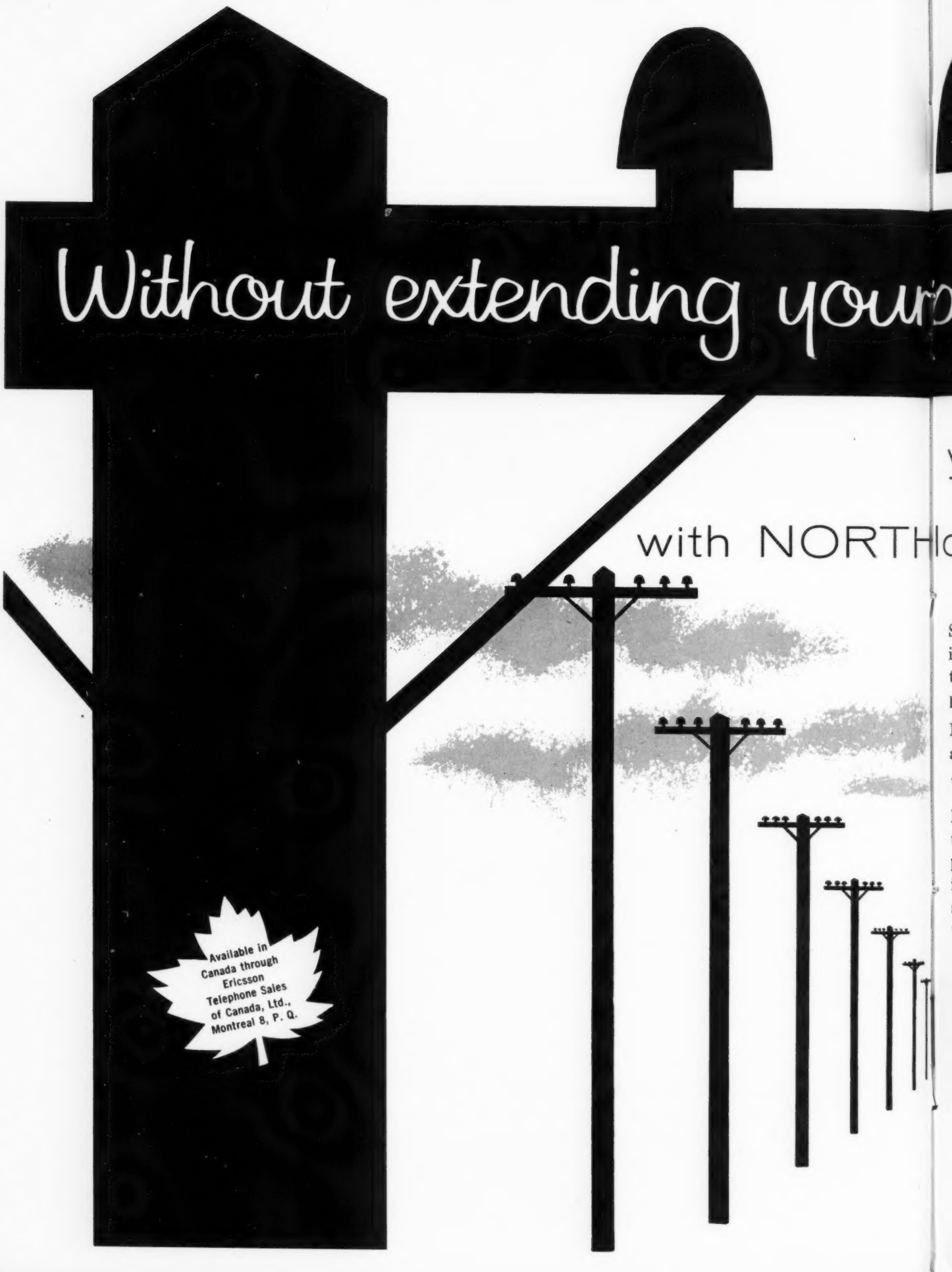
Without extending your
with NORTH
Available in Canada through Ericsson Telephone Sales of Canada, Ltd., Montreal 8, P. Q.

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# ...physical lines...

## you can extend your service

## THlow cost SUBSCRIBER CARRIER

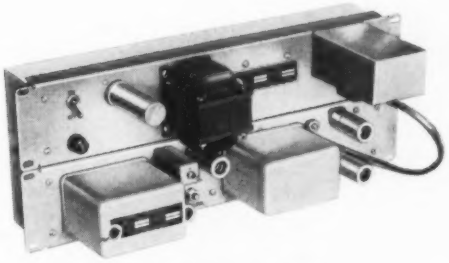
Service to the community has always been the keynote of the telephone industry. Yet today many Independent Companies, anxious to meet the ever increasing pressures for extended service, are faced with the problem of heavy expense incident to the construction of physical lines.

North Low Cost Subscriber Carrier has been specifically engineered and built to overcome this obstacle.

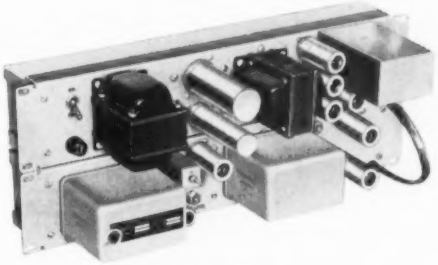
*With North Subscriber Carrier you can:*

Provide service for waiting list customers adjacent to lines now filled to capacity; reach potential customers beyond the end of present lines; provide private, two-party, or four-party lines not now available, with improved rate earnings; free physical circuits for pay stations and other special revenue services; meet demands for special temporary service, where carrier can be moved to meet changing requirements; and offer improved service to customers now on overcrowded lines!

Let your NORTH representative show you how NORTH Subscriber Carrier can do all this for you at a substantial saving over physical line construction.



CENTRAL OFFICE TERMINAL



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**NORTH ELECTRIC COMPANY**

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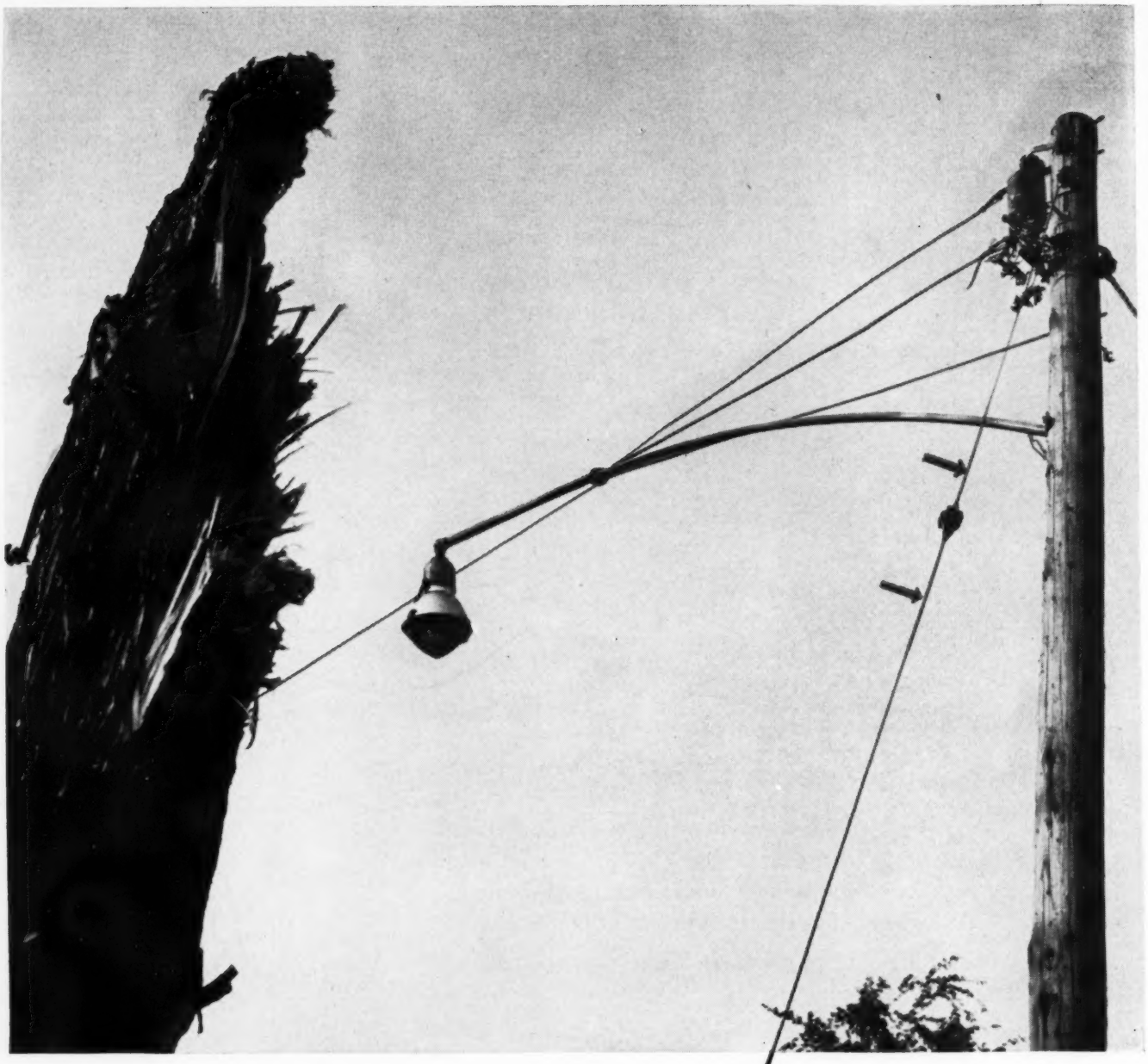

# 75 - 100 MPH Wind Rips off Tree

# PLP *GUY-GRIP* Dead-Ends Stand Firm

Nature provided the test. Hurricane-strength winds—75 - 100 miles an hour—snapped off the top half of a huge elm tree ... and hurled it against both pole and guy. After the debris was removed ... the picture told its own dramatic story. Here's graphic evidence that today's best answer to any guying problem ... subjected to any kind of condition ... is PLP Guy-Grip dead-ends.

Dept. No. TR2A

*Made in accordance with or for use under U. S. Patent No. 2,761,273; other patents pending.*

PX – 77

PLP PREFORMED LINE PRODUCTS COMPANY

# IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH, WASHINGTON EDITOR

**New York Governor Harriman fails to stampede legislators into passing his bill to stop New York Telephone Co. rate increase. Compares government-operated postal service with private enterprise utility service in present inflation.**

THE 1957 session of the New York Legislature is now history. But of special interest to the telephone industry, particularly in that state, is the failure of Governor Harriman to stampede the legislators into hasty action on a proposed bill which would have wiped out a New York Court of Appeals decision (12 PUR3d 399) regarding telephone rate making for the New York Telephone Co.

Regular readers of this department will recall that decision by the highest court of the Empire State reversed the New York Public Service Commission. The court ruled that the plain intent of the New York regulatory statute required that telephone and transit utility rates should be based upon some consideration of the "replacement cost" of the property used in such public service.

Twice Governor Harriman has sought to nullify this decision by a bill obviously aimed at blocking a 55.4-million-dollar telephone rate increase application by the New York Telephone Co. now pending before the state commission. Twice such legislation has passed the New York Assembly (lower house) only to be brought up short by the New York Senate.

The recent action of the New York Senate, however, is interesting because it was based on a senate committee rejection, *on its merits*, of Governor Harriman's proposal to nullify the court's decision. Admittedly, the governor's frank appeal for mass support of a measure openly advocated as a bar to higher telephone rates packed a lot of political appeal. Anybody will vote in favor of plugging a drain on his own pocketbook, if he is not familiar with other reasons why such action would be unfair or unwise. It is something like walking into a restaurant and asking everybody present to vote on whether or not they wanted to pay for their dinner.

For this reason, there was some speculation that the senate committee might try to blunt the unpopularity of refusal to go along with the governor's plea by a temporizing device; namely, delay. There was talk of deferring the matter pending more study, which was all right as far as it went. But the senate committee decided to meet the issue of cheap political appeal head on.

By a vote of 13 to 7—with four absentees—the committee refused to recommend passage of the rate base bill and explained its action in a three-page statement which frankly discussed the merits of the issues involved. This statement condemned misleading "publicity" that the measure was needed to block the pending telephone rate increase before the New York commission.

The committee's statement pointed out that while the public service commission must consider the replacement cost of telephone properties, "the weight to be given such evidence . . . is quite another matter." The court said that consideration of replacement costs is "by no means controlling" and only one of several factors to which the commission must give "due regard" in setting rates.

"We do not believe that the amendment proposed is in the public interest," the majority said. "We do not believe that we should abandon long-established state policy and desert principle for temporary expediency. We are confident that, with wise and patient administration, the public service commission can, within the tested framework of the present law, safely steer a course which will neither 'starve' the utilities nor enrich them against the interests of the consuming public."

Senator Mahoney, majority leader of the state senate, challenged Governor Harriman to debate "any time, anywhere" the merits of the telephone bill which failed to pass in the final days of the legislative session.

Senator Mahoney said the governor's contention that the bill was necessary to block a 55-million-dollar increase in telephone rates was "patently erroneous." He said the public service law charges the public service commission with the responsibility of determining just and reasonable rates in telephone and railroad proceedings.

### *Uncle Sam's Postal Utility*

Telephone industry people can sympathize with the recent problems of Postmaster General Arthur E. Summerfield in fighting a last-ditch battle to avoid carrying on traditional postal services with less than the appropriations called for in the budget. The budget called for 47 million dollars in supplemental funds to tide over the Post Office until July 1 while the House Appropriations Subcommittee—in a sudden burst of economy—wanted to slash this amount to 17 million dollars.

Summerfield's reaction was very forthright. He said the Post Office could cut out Saturday mail entirely and close up shop on Saturdays. It could cut down business area postal deliveries to once a day. Putting an embargo on third class mail deliveries,



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except merchandise on order, and cutting out the postal money order business, which has now reached the volume of a million dollars a day were other economies mentioned.

All of these postal services, with the exception of so-called "trash mail" (which has been flooding the mailboxes of the country in the last few years) are of value to a great many of our citizens, and Postmaster Summerfield knows it. It would be political dynamite to rip out all of these services, or any combination of them, on short notice. But, whether the irate voters would take it out on Congress or the administration's postal service, was a calculated risk which Summerfield was taking.

Yet, what has been happening to the postal service in recent years is a story all too familiar to those who have been trying to operate telephone services in recent years. In addition the Post Office has had the special political complications which are bound to bedevil any services operated by the federal government.

Just as in the case of many, many telephone companies throughout the country, Summerfield has been trying to hold the line of traditional postal services during an inflationary period when operating expenses are rising steadily while the revenue has been checked by fixed rate ceilings. Just as in the case of telephone companies, Post-office payrolls have been climbing. But there still is a deficiency in the number of competent employes willing to make their career with the department under prevailing work conditions.

Trucks are more expensive. Gasoline is more expensive. Post-office buildings and maintenance are more expensive. Everything the department buys, from a ball of twine to complicated business machinery, has gone up and up in price. Yet, you can still send a letter to Hawaii for 3 cents, just as you could before World War II. Summerfield has made a valiant effort to find short cuts to modernize and even improve some of the less efficient operations. But it has been a losing battle on the whole, and the deficits have climbed.

What has really scuttled whatever chances the Post Office ever had of breaking even has been the dead hand of government bureaucracy and political control. Years and years ago our federal government appeared resigned to deficits in the postal department. And so the attitude became crystallized that the Post Office was a necessary subsidy, with the taxpayers expected to make up the difference in any deficit. Thus, what is actually the biggest public utility business in the United States —and an absolute monopoly— Uncle Sam's own postal operations—is now falling apart at the seams.

An article in the current *Reader's Digest* points to these failures of the federal government as a public utility monopoly. It has become the victim of increasing stagnation, demoralization, political free loading by congressmen and government, and lack of proper managerial discipline.

One can easily imagine what could happen to a business-managed utility service if it suddenly and seriously announced that it would have to curtail substantial services on file because of the lack of funds. Suppose it were announced there would be no more all night telephone service, or Sunday service! There would be investigations and studies by public service commissions. There would be criticism from an outraged citizenry.

Our citizens know, however, that when the federal government itself runs a business, they must make allowances and not be too surprised when things blow up now and then. This is not to suggest that it would be practical, or even possible, at this late date to turn our Post Office business back to private enterprise. But it should make us think solemnly about what would have happened *if our telephone industry had fallen under the control and operation of the Post Office Department!* That is what has happened in most foreign countries. That is what did happen in a preliminary, tentative, but fortunately short-lived experiment during the World War I period. At that time President Woodrow Wilson's Postmaster General Burleson was all for moving in on the telephone business. But that decision did not prevail.

Comparatively speaking, our U. S. postal service has been very good over its 182 years of history. That history goes back to the days of stage coaches and pony express. And, in some foreign countries, the postal service is still excellent by comparative standards. But, elsewhere, government operation has shown signs of deteriorating.

In an article published in the Scripps-Howard newspapers, Apr. 4, 1957, under the date line of Sao Paulo, the newspaper correspondent, Don Maclean, points out that a letter dropped in any mailbox in Brazil has "only a slightly better chance of reaching the receiver than if the sender put it into a bottle and cast it into the sea." Mail is collected so sporadically and stolen so regularly that Maclean says that you just can't find a mailbox in Sao Paulo, because people have quit using them. Most people go directly to the post office or safe mailing points, such as hotels and airports. Even telegrams take a couple of days to deliver in Brazil, according to Maclean. But, a letter takes three weeks and sometimes more than that to move 180 miles.

It is hard to believe at this writing that Congress will permit our United States postal services to sink to the point of cutting out all the items threatened by Postmaster Summerfield, or even most of them. But if this incident is any omen of a future trend, the telephone companies will surely have to take it into account in planning future business load.

It goes without saying that a suspension of all postal services over a weekend is going to throw additional alternative communication load on both the telephone and telegraph services of the nation. Other curtailments, such as the suspension of mid-day business mail deliveries and postal money orders will likewise contribute to the telephone-telegraph load.

### *Farm Telephone Bills Up*

According to a recent survey by the U. S. Department of Agriculture, the farmers in the United States are paying more and more for their telephone service. This is understandable in view of the fact that everybody else has to pay more for telephone service than in former years. But the agriculture department survey makes an interesting comparison, both by years and areas, back as far as 1947.

As of last July, the department found that the average monthly bill for the entire United States was $3.66, a rise of 6 per cent over the previous year. Including the farmer's long distance calls, this average bill came to $5.45 as compared with $5.14. The survey added that the quality of service has been increasing rapidly.

Increases in average local farm telephone bills during the year ended in July, 1956, occurred in all regions and in practically all states, with increases being fairly consistent throughout the United States.

As of July, 1956, the highest bills for local telephone service were paid by farmers in the New England states, an average of $4.60 per month, and in the Pacific and Mountain regions where payments averaged $4.27 and $4.14, respectively. The lowest by far was $2.99 per month in the West North Central region where there are still a large number of farmer-owned lines. Much of the regional variation in cost is a reflection of the differences in type and quality of service provided to farmers.

The most noteworthy aspect of the department's survey was the sharp rise in dial service to the farmers. As

*(Please turn to page 40)*



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# THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

A CERTAIN meat market in the nation's capital has the telephone number MEtropolitan 8-7900, and the Chesapeake & Potomac PBX number is MEtropolitan 7-9900. It is claimed that the meat market receives 40 to 50 calls a day that are intended for the telephone company. This is all blamed on careless dialing by subscribers.

Formerly, the meat market answered by stating their firm's name, but now they simply say "hello." When the callers heard the meat market's name, they knew they had the wrong number so they hung up and dialed them right back again. By answering "hello," they have a chance to advise the callers that they have dialed the wrong number.

The meat market states that they like their number and will not consider changing it. Further, since the telephone company has a lot of numbers, why don't they change theirs?

There is no doubt that careless, slipshod dialing is causing great waste and confusion in the telephone industry at the present time. Perhaps an educational campaign on the part of operating companies on the value of careful and correct dialing might pay big dividends.

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For some time now there has been a definite need for a convenient device to hold a telephone handset at the proper level to hear and talk. This arrangement is necessary so as to leave the hands free to write or type conveniently.

Various types of rubber and plastic supports have been designed to clamp onto the handset and hold it on the shoulder. These devices have never proved entirely satisfactory although many of them are presently in use which would further appear to indicate a definite need for a properly designed support. Users of the now-available holders often suffer from a malady known as "telephone shoulder" and a stiff neck.

We had just about given up all hope that such a device would ever be made available when we had a chance to examine the telephone handset support (see cut) invented by T. W. Bowman, of Richmond, Va., on which he was granted Patent No. 2,703,824 on Mar. 8, 1955.

This holder, called the Tri-Hand, is a tripod affair which snaps open from a groove in the handset handle when a button is pressed. Two of the three legs stand against the chest, the other on the back slope of the shoulder, holding the receiver snugly against the ear and the transmitter at the proper distance from the mouth.

When the tripod is folded into the recess in the handset, it may be used in the conventional manner. The attachment on the handset does not interfere with the hookswitch when it is placed in the cradle.

There is every reason to believe that this device will find a ready sale when it is placed on the market.

Mr. Bowman is the co-inventor of the synchro-mesh, silent shift transmission, which he sold to General Motors back in 1929. This transmission has been used on all standard-shift transmissions since 1930.

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We were recently presented with two new United Nations stamps by Capt. William H. Woddrup, Signal Corps, an avid stamp collector. These stamps, a 3-cent blue and an 8-cent red, were issued to commemorate communication.

The center design contains a telephone dial, crossed by a telegraph tape. The words "United Nations" appear around the borders in the different languages of the five Security Council nations.

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We enjoyed a visit recently in the nation's capital with Milton Staub, vice president and general manager of the Gustav Hirsch Organization, Inc., of Columbus, Ohio. This organization is actively engaged in a large volume of communications work of world-wide scope.

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# Aluminum Sheathing of Cable

By OSCAR G. GARNER*

FOR THE PAST 10 years General Cable Corp.'s technical staff has diligently watched and studied the progress of the various methods of applying aluminum sheaths to electric cables. After having carefully observed and analyzed the methods of longitudinal folding and welding of aluminum strip into a cable sheath and that of inserting cable cores into over-sized extruded tubes and the subsequent die sinking or helical corrugating of these tubes to fit the cable core, the company decided to concentrate its attention on the development of applying aluminum sheaths by the direct extrusion method.

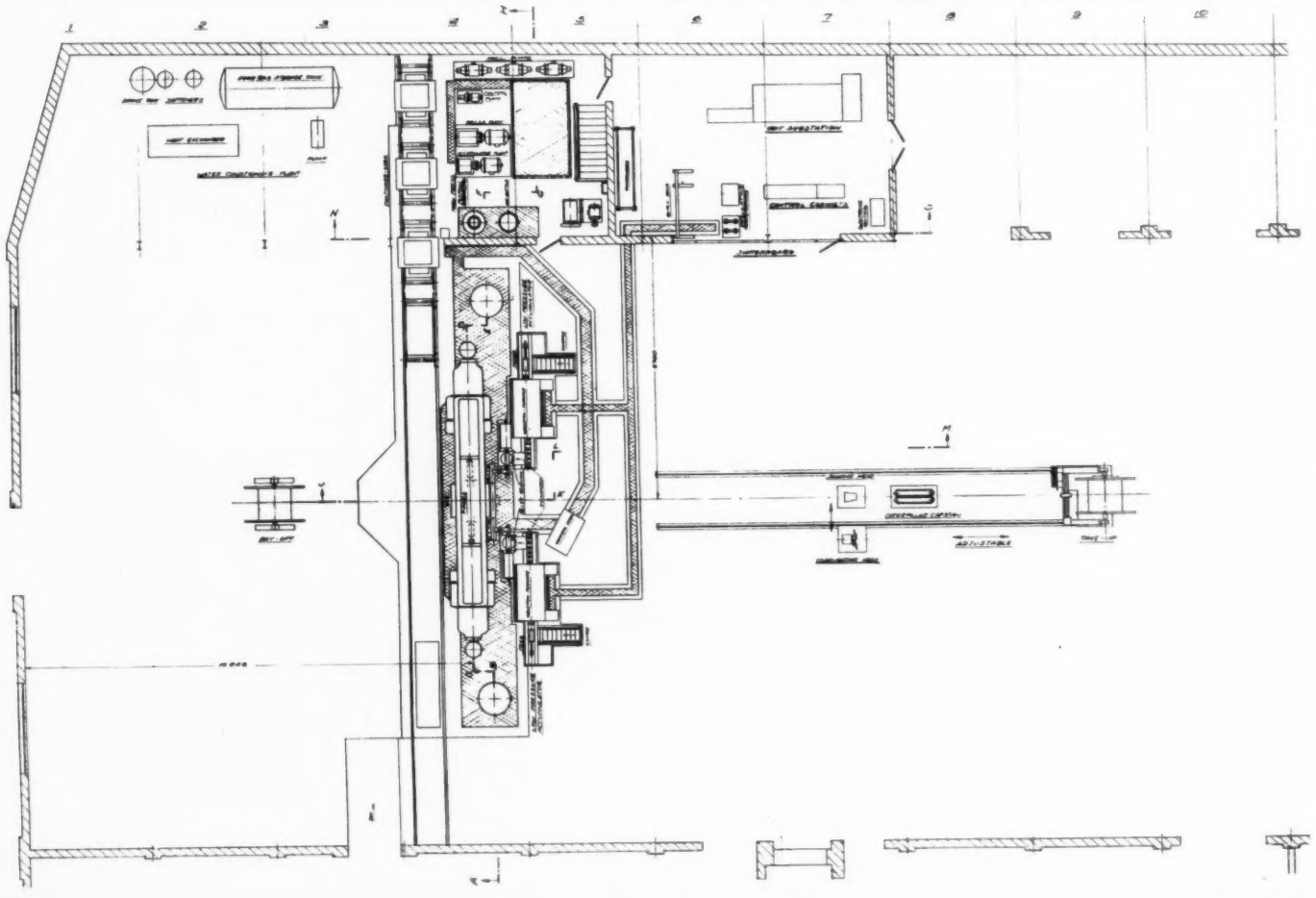
Installations of experimental and commercial aluminum cable sheathing machines were observed in Germany and England. After having seen sufficient evidence that aluminum sheathing by direct extrusion could be performed successfully, an aluminum sheathing extrusion press was ordered from Schloemann A.G. in the spring of 1954 to enable General Cable Corp. to make available to its customers in the United States directly extruded aluminum sheathed cables with controlled temper and in lengths not limited by the aluminum sheathing process.

The construction of this press was completed in the middle of 1955. This unit was then temporarily installed in Germany for test runs and evaluation as a joint venture between General Cable Corp. and Schloemann A.G. Paper and rubber insulated cables ranging in diameter from less than a quarter of an inch to more than 2 inches were sheathed on the small die block, which was installed for this evaluation, with commercially pure (99.5 per cent) aluminum at high temperature, in continuous lengths, without damaging the cable insulations and without air blisters. After several months of trial runs and successful performance, the press was dismantled and is now being installed at General Cable's Perth Amboy plant.

The purpose of this paper is to describe and illustrate the first direct extrusion aluminum sheathing press and its auxiliary equipment installed in the United States, and to discuss some of the engineering problems involved in making this process capable of producing a satisfactory product on a commercially attractive basis.

*Mr. Garner is vice president of General Cable Corp. He gave this address at the 1956 Signal Corps Symposium on Wires and Cables.

GENERAL LAYOUT OF DIRECT EXTRUSION ALUMINUM CABLE-SHEATHING PRESS AND AUXILIARY EQUIPMENT

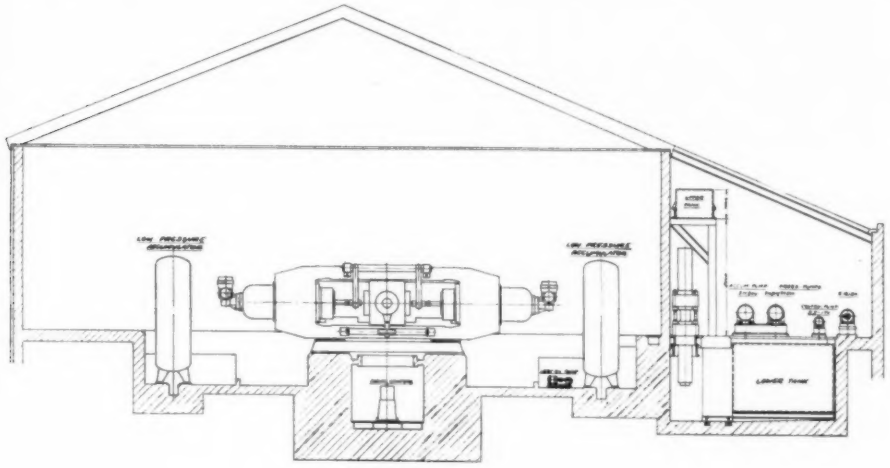


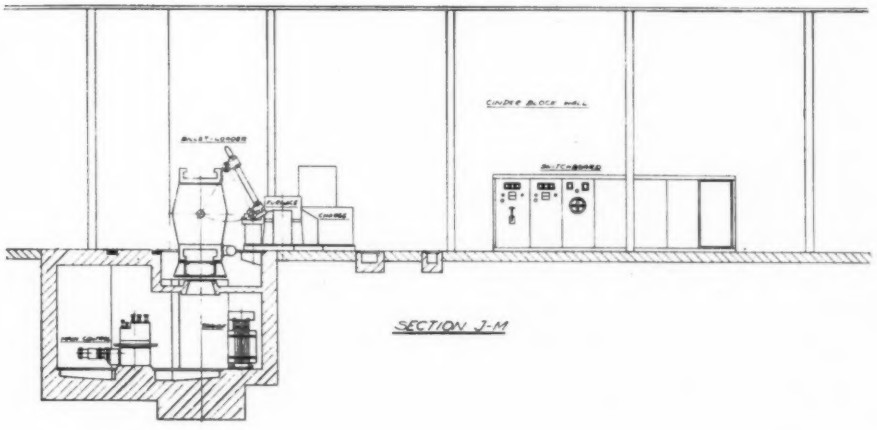
The assembly layout shown on the accompanying pages illustrates the arrangement of the press and its auxiliary equipment.

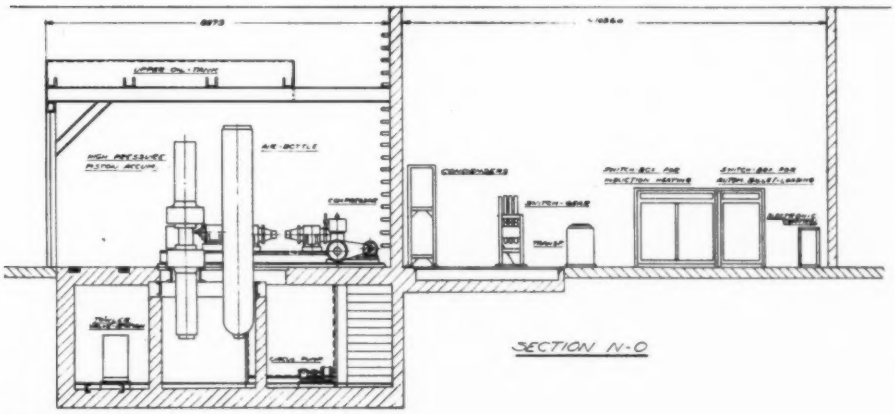
The installation consists of the following principal parts:

(1) Extrusion press and the attached billet loading devices.
(2) Pump assemblies.
(3) Low-pressure accumulators for inserting of heated billets into containers.
(4) High-pressure piston accumulator for upsetting of billets and withdrawing of rams.
(5) Oil supply, circulating and filtering system.
(6) Electro-hydraulic controls.
(7) Master control station.
(8) Electric substation and switchgears.
(9) Induction furnaces for billet heating.
(10) Water treating, cooling and recirculating system.
(11) Takeup and payoff stands.
(12) Caterpillar type capstan with corrugating and die sinking unit.

The extrusion press is a horizontal double piston — double billet unit of 1,760 tons capacity, designed for the use of commercially pure (99.5 per cent) aluminum. The press frame is a one-piece rectangular steel casting weighing approximately 100,000 pounds. This design eliminates the necessity for columns which are used on conventional presses built in the United States. The ends of this frame are bored to accept two hydraulic cylinders and rams.




The exposed ends of the hydraulic rams with the attached extrusion rams are mounted in cast steel yokes, one for each ram, to which are bolted adjustable guide shoes, and these shoes are carried on rails which are attached to the bottom of the press frame. This guide assembly facilitates the proper alignment of the extrusion rams with the billet containers. Each ram is separately operated by individual control systems.

The die block assembly is mounted in the center of the frame. This assembly consists of the die block, two billet containers mounted on opposite sides of the die block adjacent to the extrusion rams, a cooling system to protect the cable core and cool the extruded sheath, and an adjustable die holder for opening or closing the spacing between the die and core die to regulate the wall thickness of the aluminum sheath while the press is in operation or stopped.

This adjustment of the die holder is controlled by a large "ratchet spanner" which is operated by a double-acting hydraulic cylinder.

The billet containers are mounted on the same center line as the extrusion rams and the center line of the die block is at a right angle to the center line of the containers. The center lines of the die block, rams and containers are all in the same horizontal plane.

The "ratchet spanner" is mounted concentrically with the die assembly on the die block at the extrusion side. The hydraulic cylinder which operates the spanner is in turn mounted on the lower part of the press frame.

The die block and extrusion tools used in the aluminum press are similar to those used in the conventional lead sheathing press. The double-ram design is instrumental in keeping the cavity in the die block very small.

Because equal pressure is applied from opposite sides of the die block, equal radial pressures are built up against the die and core die so that a radial displacement of the tools in the die block is prevented. By means of this design the flow of aluminum is greatly facilitated.

Both the core die and die are inserted and removed from the cable discharge side of the press. A water cooling device is used at the cable entrance side of the die block to protect the

cable insulation from the high temperature of the die block and core die by cooling the core die, the aluminum and the air adjacent to the unprotected insulation between the core die and die.

On the cable exit side of the die block is a second water cooling device which is designed and placed to effectively cool the sheath and protect the cable core after it has been extruded.

Two automatically controlled billet loading devices are mounted on the upper part of the press frame facing the extrusion side. Each loading mechanism consists of two hydraulically operated swinging arms and each arm has a clamping device to carry and place into position the heated aluminum billets.

The hydraulic synchronizing control is mounted on the upper part of the press frame where the cable core enters. This unit assures the synchronized travel of the two rams and automatically controls the uniform average rate of displacement of aluminum in each container.

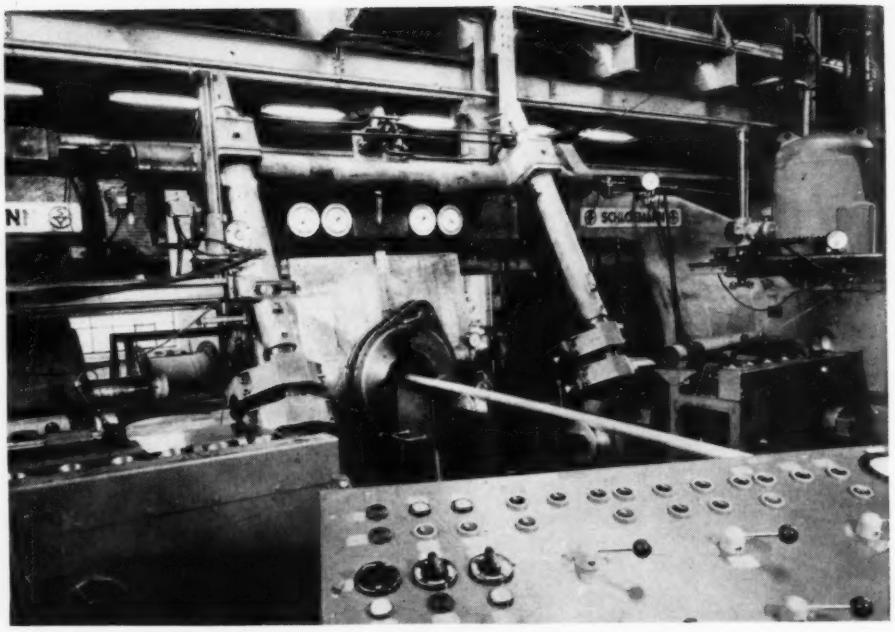
The low-pressure air accumulators are located at each end of the press frame and provide the power for the rapid forward motion of the rams and the inserting of billets into the containers.

The high-pressure piston accumulator furnishes the energy for the "upsetting" of billets and the consequent displacement of air from the charged containers and prevents air blisters in the extruded sheath. This high-pressure accumulator is also utilized for the rapid withdrawal of the rams after the billets have been extruded.

The actual extrusion of the aluminum sheath is done by a combination of 14 constant-volume pumps of various capacities; seven of these pumps are connected directly to each cylinder and each pump operates at a pressure of 315 atmospheres (4,600 pounds per square inch).

The movement and control of the extrusion rams are provided for by the main control valve station which is mounted under the press. The individual valves of this assembly are opened and closed by cams which are positioned through an electronically regulated servomechanism activated from the pilot control of the master control station.

The extrusion speed of the aluminum sheath is controlled by a rotary port valve mounted at the master control station. The outlets of the high-pressure extrusion pumps are connected by pipe to a control valve station and a single pipe connection is run to each hydraulic cylinder on the press. Each valve in this station is equipped with a pilot control valve. These pilot valves are connected to the speed-regulating control at the master control station and the pressure required to open and close the valves is supplied by an individual control pump.



**Direct extrusion aluminum cable-sheathing press.**

By operation of the speed regulator at the master control station any of 31 increments of extrusion speed can be selected. This regulator is a rotary valve with a series of ports that are arranged to open and close the main valves between the extrusion pumps and the hydraulic cylinders. The capacity of each set of seven pumps is 110 liters per minute and this output can be controlled in 31 steps of approximately 3.6 liters per minute.

Two low frequency induction furnaces, each rated at 195 kilowatts, for heating the aluminum billets are located at the exit side of the press symmetrically to the die block assembly. The aluminum billets are placed on inclined storage tables from which they are automatically released and rolled onto transfer trays and then pushed forward through the induction coils of the furnaces. As the billets emerge from the heaters, after having been heated to 500 C, they are automatically transferred to tables consisting of three rolls shaped to support the billets with a minimum of surface contact.

Mounted on each table is a combination screw-operated pusher and water spray. The location of the pusher is such that it is concentric with the billet on the table. Directly in front of the billets on the table and also concentric with the billets are positioned the clamping devices of the two billet loading arms. As the billets are transferred to the table rollers, the pushers are automatically activated and move forward, placing each billet into its corresponding swing arm. The billets are then sprayed with water to reduce the temperatures of the ends facing the extrusion ram to 400 C.

The master control station is equipped with all of the necessary controls to operate the press and also with signal lights which indicate the proper operation of the auxiliary heating and pumping equipment. Ease of operation is accomplished by grouping the controls and signal lights which pertain to the operation of an individual unit, such as the servomechanism for the main control valve station, the transfer of billets through the induction furnaces into the billet-loading swing arm, the induction heating of billets, the water sprays for cooling one end of each billet, the induction heating of the containers, and so forth. These controls provide for either automatic or manual operation.

The oil of the hydraulic system must be clean and free from foreign particles, and the hydraulic pressure of 4,600 pounds per square inch necessitates close tolerances between any two moving parts. To assure that this condition exists, all welded parts of the circulating system such as the pipes and tanks were pickled, neutralized and flushed after fabrication of subassemblies and before final installation, to remove foreign particles. During the operation of the press the oil is constantly circulated and filtered.

The oil storage and circulating system consists of three tanks: an upper or high-level tank from which the oil is fed to all equipment by gravity; a lower oil tank is used for make-up and



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oil conditioning; and a leak oil or sump tank.

The upper and lower oil tanks are closed and sealed against the entrance of air except for one opening in each tank in which air filters are installed to prevent foreign matter from entering the tanks.

The function of the upper oil tank is to supply all the high pressure pumps and the high pressure accumulator, which is fed by gravity through a magnetic filter to remove iron particles that may be present. The oil, fed through the pumps to the various units during operation, returns directly to the upper oil tank.

The function of the lower oil tank is to prepare the new oil and to receive the surplus oil from the upper tank. Oil accumulated in the leak oil tank is also returned to the lower oil tank through a filter system. Thus, the oil is constantly being circulated and filtered between the upper and lower tanks.

A further function of the lower oil tank is to supply oil to the low pressure accumulators. Careful attention to the filters assures a clean supply of oil.

A take-up stand, accommodating large diameter reels, is mounted at the cable exit side of the extrusion press. The position of the take-up is adjustable for a distance of 20 to 70 feet from the press.

Interposed between the press and take-up stand are a caterpillar type capstan and a corrugating roll stand or die-sinking stand, as required. With this auxiliary equipment the following types of cables can be produced in one operation:

(1) Directly extruded aluminum sheathed cables.
(2) Die-sunk aluminum sheathed cables.
(3) Corrugated aluminum sheathed cables.

### *Die Block Design and Cooling*

The cable passes through the die block horizontally and perpendicular to the direction of the motion of the extrusion rams. The die block is located between the two billet containers which are equipped with the low-voltage low frequency induction heating units.

The cable core, upon entering the die block and core die, is protected from the high temperature of the die block by means of a specially designed water-cooled tube assembly. The end of this water-cooled tube assembly is in positive pressure-contact with the core die.

On the cable exit side of the press, the cable sheath is uniformly sprayed with water around its circumference near the point of exit from the die.

To obtain effective cooling, it is essential that the cooling device be brought as closely as possible to the die without chilling the die. Chilling of the die itself would increase the extrusion pressure, and it is therefore essential that only the extruded aluminum sheath be cooled.

The removal of heat by the two cooling devices on the core and sheath side of the cable is so effective that even though the aluminum is extruded at a temperature of 500 C, *it is in contact with the cable core at this temperature for only a small fraction of a second,* so short a period of contact that no harmful effect on the cable core is experienced during the extrusion process. The surface temperature of the aluminum sheath after leaving the cooling tube is less than 60 C. The temperature-time schedule to which the cable core is exposed in this press is not more severe than that in a conventional lead press.

As the extrusion cycle nears completion, it is important to gradually and slowly reduce the extrusion speed during the last half-minute before a full stop is reached. This gradual deceleration of the extrusion speed is accomplished by built-in pressure reliefs in the hydraulic system.

During this slow-down period the cooling effect on the extrusion side reduces the die temperature, and once a full stop has been reached the die itself is sufficiently cooled to absorb the heat from the annulus of aluminum between die and core die and from the "bamboo ring" (press stop mark) section of the sheath so that damage to the cable core is prevented.

It is possible, on a purely thermal basis, to have stopping periods for as long as desired without damaging the insulation of the cable core. The stopping of the press for the purpose of charging billets is about one minute. During the extrusion operations in Germany, paper-insulated cables have remained in the press for periods of five minutes and longer without damage to the insulation.

The degree of cooling can be adjusted by changing the spacing between the cooling unit and die, and this makes it practical to obtain temperature conditions similar to those prevailing in a lead press.

### *Continuous Extrusion and Blister Prevention*

As a primary requisite it is essential that the as-cast billets be free of internal defects. Also because the as-cast billets have rough surfaces and contain surface inclusions, it is necessary to remove these imperfections before the billets are charged into the press. The billets must be machined into a true cylindrical shape with smooth surfaces, flat ends and be free of surface inclusions. The diameter and length must be accurately controlled within the required tolerance limits. When billets are charged into the containers of the press, it is essential that the clearance between billets and containers be as small as possible.

Any air entrapped in the containers would appear as blisters or perforations in the cable sheath. By placing accurately dimensioned billets with smooth surfaces into the containers there is a minimum of air volume present. If the inserted billets were uniformly heated over their entire lengths, the billets would expand under ram pressure at the center sections before their ends expanded, and air would be trapped between the center sections of the billets and the aluminum remnants left in the containers. This trapped air would be considerably compressed and when transferred into the extruded sheath would cause blisters and perforations.

A fundamental and important technique for preventing air inclusion in the finished sheath is the development known as "upsetting." The billets heated to 500 C are thermally "tapered" by chilling one end to 400 C. The "tapered" (gradient) heating of billets creates a differential of plastic deformation between the ends of the billets during upsetting.

The chilled section of the billets facing the rams have greater resistance to deformation, and when ram pressure is applied against the billets, they are changed for an instantaneous period from the cylindrical shape into a conical shape and this deformation advances toward the ram until the billets have been transformed into a cylindrical shape fitting tightly into the containers. This conical "upsetting" of the billets displaces the air from the containers and prevents air inclusions or blisters in the sheath.

Properly cast billets with smooth surfaces, "tapered" heating of billets and precise control of "upsetting" of the billets in the containers into conical form has made it possible to extrude aluminum sheath reliably without air blisters or perforations.

### *Sheath Thickness Control*

During extrusion of the sheath, the aluminum in the die block is under considerable pressure, and this pres-

*(Please turn to page 44)*

## *TROUBLE CLEARING*

# Facts & Fallacies About Magneto Service

By L. N. MARTIN

**PART 55. The preceding article in this series appeared on page 28 of the Feb. 16 issue.**

WHY SHOULD we be writing about the magneto telephone at the present time? Many magneto exchanges are still in service. On Jan. 1, 1956, Independent telephone companies had approximately 4800 magneto exchanges. That was about 44 per cent of the total of Independent exchanges, including the large city exchanges. Magneto boards are now found only in small offices, with one-position boards predominating. If we should compare the number of magneto exchanges to the total number of *small* exchanges, this percentage would probably run much higher.

Now, even if we grant that the last of these exchanges will have disappeared from the scene within the next few years, each one must be maintained during the remainder of its life.

Each magneto exchange is very important to the community it serves. It furnishes the *only* telephone service these people have and they are entitled to the best service the company can furnish.

*Good* service is also *good* business for a company. It attracts new customers, more toll business, and more auxiliary business, such as extension telephones, hence revenues are increased.

Where public opinion is forcing a small company to convert to automatic operation, before it is ready to take that step, the public reaction has probably been generated by *poor* magneto service. Unless that company mends its ways the service will continue to be poor and its public relations will not improve no matter what kind of a switchboard they install.

The owner of a magneto exchange should understand that he *can* give good service with his present plant. He should know that many of the derogatory statements made about magneto service are untrue.

On the other hand, he should be acquainted with the real shortcomings and limitations of the magneto system and try to offset them whenever possible.

The popular opinion is that magneto lines are always noisy, crosstalk is prevalent, and transmission is poor. Now, a telephone man should know that these conditions are in the outside plant and have nothing to do with the magneto switchboard or the magneto telephones.

This trouble would actually become worse if the plant were cut over to automatic without correcting the outside plant conditions.

The first step in an automatic cut-over is to thoroughly overhaul the outside plant. If that must be done before a cut-over, why not do it *now* and give *good* magneto service in the meantime.

Transmission over a magneto line is just as good and sometimes better than that over an equal common battery line. We must remember that toll lines are like magneto lines in that they carry no battery current. However, the dry cells in the magneto telephone must be in good condition to attain good transmission.

The magneto switchboard requires a human operator. One fault of the magneto system is that the operator does not get a disconnect signal when the subscriber hangs up. To give good service she must "listen in" on all connections at frequent intervals and "challenge" if she does not hear a conversation. Now, this is no excuse for poor service. The operator must be trained in magneto operation and she cannot be expected to handle as many lines as she would on a common battery board.

The automatic board substitutes a mechanical operator for a human operator. There are arguments in favor of each. When an operator makes a human mistake, such as ringing a wrong number, we may wish for a mechanical operator.

However, the automatic board does not eliminate wrong numbers. It merely transfers the chance for a human error from a trained operator to an untrained subscriber. (Note: "Wrong number" and similar reports increase after a cut-over to automatic. They decrease again in time but are never eliminated.)

On the other hand, when some emergency comes up, we may wish for the prompt and effective action of an intelligent human operator. Every few days we read in the papers how a courageous and quick thinking operator has saved life and property. Some of these women receive medals and other awards for their acts. However, so far as we can learn, no medal has yet been awarded to an automatic switchboard.

Now, the foregoing discussion of operators is not intended to prove anything. However, it does remind us of the old saying, "You can't eat your cake and have it, too."

Some small exchanges have trouble obtaining suitable operators. One company, with which we are well acquainted, is converting to automatic solely because it cannot obtain operators in its community. On the other hand, we know of many small companies which have no trouble whatever in getting excellent operators at reasonable wages.

If, someday, the federal wage-hour law is changed to eliminate the present 750-station exchange operator exemption, many small companies operating manual exchanges will be in hot water. If they were forced to pay the minimum wage rate to operators, on a 24-hour basis, their operators' wages would exceed their gross revenues.

We are not prepared to discuss this problem in the present article; however, in the final analysis small companies must give their subscribers good telephone service and the companies must earn a reasonable return on their investment.



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That is all we will say about the traffic problem as that is somewhat out of our line. We hope, however, that no small company will feel compelled "to go dial" before they are ready because their own poor service (plant or traffic) has aroused the public, or because it does not have confidence in its own ability to give good service with its present magneto plant.

The whole problem, including the method of financing the new exchange, should be thoroughly studied. There will be a large savings in operators' wages, but this will be offset somewhat by increased central office maintenance, increased carrying charges on the switchboard, and payments to some larger company for operator and information service.

Some may question our statement about central office maintenance costs. They may have been led to believe that an automatic board will require little or no maintenance. The experience of the large companies is otherwise. In many cases, it costs much more to maintain a modern car with all sorts of automatic gadgets, from automatic transmission to automatic window openers, than it did to maintain the simple Model T.

A magneto switchboard is a very simple affair compared to an automatic board. It requires less maintenance than any other type of board, however it does require some maintenance. Every machine does.

The outside plant in a magneto exchange requires about the same maintenance as that in a common battery manual or in an automatic exchange. Yes, we know that you can "get by" with conditions in a magneto exchange that would put an automatic office out of commission but that is *very poor policy*. In our opinion, the outside plant should be kept up to the same standards that would be required in an automatic exchange.

Station maintenance is about the same in any type of plant; but in a magneto exchange there is the additional job of replacing the dry cells from time to time.

There are two completely opposite methods of going about the telephone maintenance job. One is to fix each case of trouble that is reported and let it go at that. The other is to continually test and inspect the plant to eliminate potential trouble before it causes a report.

The latter method is called "Routine Maintenance" or "Routining." The large companies spend much money on routine maintenance. They are continually going over their plants making many kinds of tests, inspections, and adjustments. Each routine is scheduled for a certain week or month in the year. This is especially true in an automatic central office.

In an automatic office there is no operator to report trouble which she might encounter in the course of her work, and when a subscriber reports a case of trouble, which seems to be in the central office equipment, it is impossible to tell what particular switch, relay, or other equipment item was involved in the trouble. Dependence must be placed on routine tests that cover all of the equipment.

However, we believe that some large companies sometimes overdo their routines and that some of their methods would not be suitable for a small company. The small exchange owner wants a common sense plan that will be as inexpensive as possible and yet will maintain his plant at a high standard.

Long before the word "Routine" was ever used in connection with telephone maintenance, we followed a program that might be called the "Where there's smoke there's fire" plan.

It works like this: A certain cord circuit is reported as "Can't hear at times." We find the trouble to be due to a dirty key contact. We now reason that since all of the keys are exposed to the same amount of dirt, other keys may have the same trouble or are liable to develop the same trouble at any time.

Therefore, clean *all* of the contacts in *all* of the keys. We then try to devise a plan for preventing dirt from entering the key compartment.

We have thus completed a routine that we knew was needed because it had already caused a case of trouble. We did not set a future time for doing this job but did it *now*.

Is this time consuming and costly? We think not. It would have cost more to clean those keys one at a time as trouble was reported and our plan has prevented many cases of trouble and raised the standard of our service.

Somewhat the same plan may be used in the outside plant. For example: One cable pair goes bad. It is easy to transfer that line to another pair and go on our way.

But what caused the trouble? Is there a hole in the cable? Will the cable get wet in the next big rain? Was the trouble caused by lightning—and if so, are the protectors, grounds, and bonds correctly installed and in good condition?

A little work *now* to get the correct answers to all of these questions may save many cases of trouble and much time later on.

Station trouble is handled somewhat differently. It is bad policy to enter the subscriber's premises more often than is absolutely necessary. If he has a case of trouble or wants his telephone moved, the telephone man is welcomed. He is there to do something for the subscriber. But the customer may be resentful if the repairman says: "I just want to look at your telephone to see if everything is OK."

A plan that has proven successful is this: When a station is visited for *any* reason make a complete inspection from handset to cable terminal, correcting at once all defects and potential trouble found.

Suppose the repairman has come to move the telephone. He completes that job *first*, then says: "While I am here I want to look over the whole installation to see if everything is OK. I will first replace this cord. It is dirty and frayed and might cause you trouble some time, and I will tack up that wire along the east side of the room before someone stumbles over it."

This procedure seems logical to the subscriber and he is well pleased. Perhaps, the repairman also will sell the subscriber an extension telephone for the second floor and install it then and there before the subscriber changes his mind. When the repairman finally leaves he will feel reasonably sure that he will not have to return to that house on a case of trouble for many months—perhaps years.

But some owners and managers will say: "We are too busy to do all that. We have to do the job we came to do in the shortest possible time and hurry on to the next case."

We must be reasonable in all things. There may be a day now and then, or several days at a time, when you will have to lay aside this plan.

However, if this lack-of-time excuse keeps up week after week and month after month, *something is wrong* and it will not get better until you make some radical change in your organization or your methods.

The plan we have outlined will, in the long run, *save* time and money. It will also reduce trouble, bring the plant up to a higher standard, and improve public relations.

To maintain any machine we must first know how it works. The magneto switchboard is very simple. Its circuit may be learned by anyone who can clear trouble in the outside plant and learn the circuit of a magneto telephone. It is, therefore, regrettable to see a man trying to work on the board without first learning the purpose of each circuit. He may need a little help in getting started on a study of the cir-

*(Please turn to page 48)*

# Managerial Skills for a New Age

*By Ralph J. Cordiner**

I AM HONORED to have the opportunity to address such a distinguished audience as the Executives' Club of Chicago, and would like to utilize the occasion for a few minutes of serious "shop talk." Specifically, I would like to explore with you the changing character and demands of the kind of work in which you and I are engaged—the work of a professional manager.

It seems clear that past patterns of successful management are not adequate for today, and that even today's best will fall short of the ever-increasing demands of the years to come. Regardless of the size or variety of the enterprise we are called upon to manage, we find it increasingly difficult to keep in view the total assignment, the ever-widening range of managerial responsibility.

Today, I would like to suggest to you some of the challenges that will have to be met, and some of the new skills that will have to be acquired and used, if we are to be successful executives in the years ahead. We are concerned here not only with our personal careers, but also with the careers of our successors after we are on the retired list.

The businessman is sometimes pictured as a reactionary defender of the status quo, but it might be more accurate to say that in the business world of the United States, there is no status quo. There is only a changing pattern of innovation and obsolescence.

In our competitive system, every company tries ingeniously to keep its personnel, products, processes, facilities, methods, and ideas ahead of competitors.

This vigorous competition in innovation has made the economy of the United States the most productive and progressive in the world, pouring forth a torrent of new technologies, new products, new industries, and new employment opportunities.

Yet I wonder whether, in all this turmoil of innovation and change, we managers sometimes have the foolish idea that we personally stand apart, unchanging, exempt from obsolescence.

Let us have the humility and the frankness to admit that managerial attitudes and skills, like any others, are subject to rapid obsolescence in this age of change. The manager who does not keep up with the times—or rather, keep up with the future—is going to find himself as obsolete as yesterday's newspaper, and almost as quickly.

### *Changes in Managerial Attitudes*

Consider how, in our lifetime, the demands on business have changed, and how managers have changed to meet their new responsibilities.

There apparently was a time, in the beginnings of the industrial era, when ambition, vision, and a certain ruthless determination were the primary requirements for success. This was the age of the pioneers or the tycoons, depending on your point of view. The tycoon had passed from the stage by the time most of us took on managerial responsibility.

There was a time when, in most companies, the "boss" was a man contemptuous of learning. Today, business and education co-operate to prepare men for business leadership, and managerial positions are increasingly held by educated persons. By this, I do not necessarily mean persons who attended college, but persons who keep learning, keep educating themselves as long as they live.

There was a time when business operations were run almost on a day-to-day basis. Today, a manager must anticipate the future and plan ahead—preferably ten to twenty years ahead—if he is to remain competitive in serving customers successfully.

There was a time when current profits were the only concern of most businesses. Today, larger goals of stability and steady growth in earning power bring new perspectives to the manager, without reducing the necessity for sound current earnings.

There was a time when the manager felt that if his stockholders were happy and if his customers were not going over to his competitors, he was satisfying his managerial responsibilities.

Today, the manager knows that continuing usefulness and profitability depend on a much wider spectrum of relationships involving not only customers and share owners, but employes, other businesses, other institutions, and the society as a whole.

### *Skills Reflect the Times*

A review of the history of business seems to indicate that certain skills are especially required at certain times, and the country's leading executives tend to reflect the demands of their times.

In the early years of the century, when capital was relatively scarce, the financier was the predominant figure in industry, with the lawyer at his elbow.

Then, during and after the First World War, the concept of mass production was given new meaning by such creative men as Henry Ford, and this country saw the rise of the production man as executive.

*(Please turn to page 30)*

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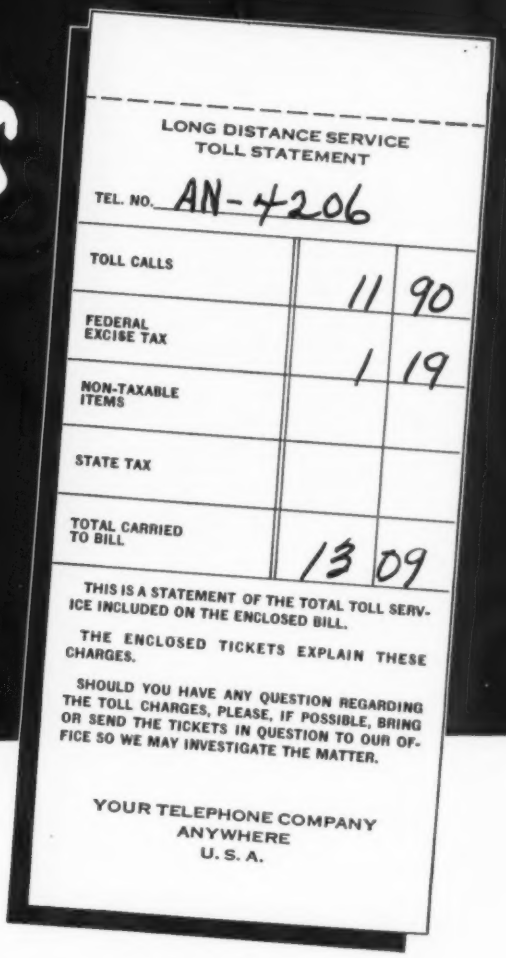
# 200 calls or 2

Your toll bills will look like this


LONG DISTANCE SERVICE
TOLL STATEMENT
TEL. NO. AN-4206
TOLL CALLS 11 90
FEDERAL EXCISE TAX 1 19
NON-TAXABLE ITEMS
STATE TAX
TOTAL CARRIED TO BILL 13 09
THIS IS A STATEMENT OF THE TOTAL TOLL SERVICE INCLUDED ON THE ENCLOSED BILL.
THE ENCLOSED TICKETS EXPLAIN THESE CHARGES.
SHOULD YOU HAVE ANY QUESTION REGARDING THE TOLL CHARGES, PLEASE, IF POSSIBLE, BRING OR SEND THE TICKETS IN QUESTION TO OUR OFFICE SO WE MAY INVESTIGATE THE MATTER.
YOUR TELEPHONE COMPANY
ANYWHERE
U. S. A.

## See how Recordak Toll Billing System cuts billing time 40%

Only 5 entries per bill at the most—regardless of the number of calls. That's how Recordak Toll Billing boils down the job.

No longer will you itemize each call. No need to because you microfilm your toll tickets—for the office record—and send them out with the bill. The savings in billing time are great—40% or more reported by independent companies of every size. And the microfilming costs are so surprisingly low that it pays even the smallest companies to use this unique system.

Look—you can purchase a Recordak Junior Microfilmer for as little as $550. Or rent one at low monthly cost. Anyone can operate it . . . take 40 or more pictures per minute. And you can put 3000 toll-ticket pictures on just 60¢ worth of film, processing included. A film reader is built right into this versatile microfilmer, too—*you just can't beat the value!*

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## Subscribers—everywhere—favor new system

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Price quoted is subject to change without notice.

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*(Subsidiary of Eastman Kodak Company)*

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415 Madison Avenue, New York 17, N.Y.

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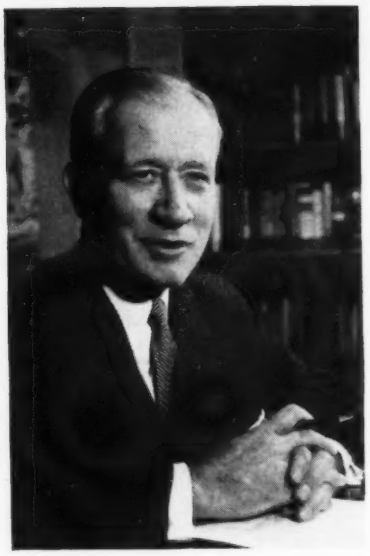
# Managerial Skills for a New Age



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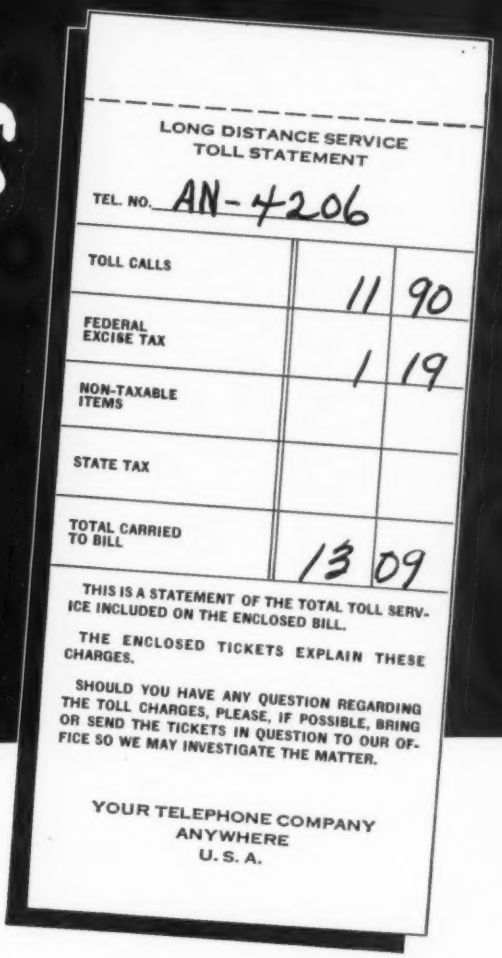
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# personal matter

In more and more families these days, members are talking about "*my* telephone" instead of "*our* telephone."

Mother has her telephone in the kitchen. Dad has one in his workshop. The teen-ager has one in her room.

The young lady shown here is from a full-color telephone advertisement for national magazines. This is one of a series of ads that points up the advantages of adding convenience and color through more telephones in the home. We hope the effect of these ads will be helpful to telephone companies everywhere.

**BELL TELEPHONE SYSTEM**

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The case of Henry Ford is particularly fascinating. His Model T was the first mass-produced, standardized, low-cost car—"in any color as long as it's black." His $5.00-a-day wage, his assembly line, and his concepts of production for the "masses" breathed new life into the economy. Yet this was not enough.

The period of the production executive was superseded by a period when the sales executive was the man of the hour. He perceived that the people wanted something more than "any color as long as it's black," and built on the extra values of comfort, convenience, beauty, variety, and other psychological values over and above the basic function of the product.

By the way, we in General Electric are careful not to laugh too hard at that old joke about "any color as long as it's black." Until three years ago, we offered our customers any choice of color for their refrigerator or electric range—as long as it was white.

The production man again had his hour during World War II, when he wrought miracles to save his country. In the present age of research, we might suppose that the scientists and the engineers would be the great executives, and there are indeed many successful managers today who have technical backgrounds. The rise of public and employe relations work suggests that these relatively new skills might also be a source of managerial manpower.

But through all these succeeding changes in the skills demanded of people in business, we have come to a new understanding of the actual work of managing. Most of the executives I have spoken of, men of tremendous competence, will be remembered as great financiers, great production men, or great salesmen—but only a few of them would be considered great managers in the present circumstances.

Today, we see that a good manager is one who basically gets results through the work of others—both other managers and functional individual contributors.

### *Management: A Distinct Profession*

Most of us start our careers in one of the non-managerial functions, such as marketing, engineering, research, manufacturing, finance, public relations, or law. Successful experience in one or more of these functions appears to be a necessary apprenticeship for perceptive managing.

But it is now becoming clear, as certain pioneers have insisted all along, that managerial work is essentially different from these other functions, just as they are different from each other. It is increasingly recognized that, as a man moves into managerial work he must go through a renunciation.

He must renounce his earlier type of work, turn it over to others, and take on the specific work of managing. This is necessary if he is to see his assignment whole, in its full range of challenging responsibilities.

Of course, there is not now, and probably never will be, a "typical" or "average" manager. Positions of leadership, almost by definition, are won by strongly individualistic persons who have acquired the skills and attitudes necessary to their field of endeavor.

### *Successful Manager*

Those critics who profess to find a cult of "conformity" or "mediocrity" in business today have, in my opinion, been seriously misled by their own preconceptions.

Today's successful manager must still be a man of uncommon energy, uncommon will power, and uncommon perceptiveness. But he needs more than these traditional virtues of the successful businessman.

Increasingly, the successful manager in America will be an intelligent and dedicated individual who sees managing as a distinctive profession in itself, with its own set of professional ethics, its own body of learning, and its own classifications of work.

As in other professions, competence in this field will require specific study and experience, as well as the development of a distinct philosophy and mode of action appropriate to the profession.

Now, with this recognition of managing as a distinct profession, have we come to the end of the line in the evolution of the manager? Of course not. We have arrived, instead, at a fresh starting point which opens up many new and challenging avenues of advance.

Many of these advances will be in the traditional area of economic performance: that is, in making and selling goods and services at a profit. But the manager who confines his efforts to these relatively familiar parts of his assignment is not recognizing newer, and perhaps more difficult, parts of his total responsibility.

Beyond the traditional assignment, the making of material things, lies a whole spectrum of political and social responsibilities that are urgently clamoring for attention.

These responsibilities must be managed with the same energy and effectiveness that the manager now accords his material work. If he does not, I am afraid that the professional manager will become as obsolete as the tycoon, and the work of managing will be taken over by the state with political officials doing the planning and policy guidance, while domesticated bureaucrats—the professional ex-managers—are assigned such administrative details as producing and selling goods.

If these seem like unwarranted fears, simply look at what has happened around the world in the past 40 years. The totalitarian states and the so-called "mixed economies" which characterize most of the globe today owe their existence, in part, to businessmen who failed to measure up to the full responsibilities of a free society and a free market.

Here in the United States, capitalism has matured a great deal since Commodore Vanderbilt made his famous remark, "The public be damned!" Few businessmen today would deny that public opinion is a force to be reckoned with, listened to, and cultivated.

Even more important, most business leaders today are deeply convinced—and this is an ethical conviction, a matter of living conscience—that they must manage their business in a way that is fair to everyone who is affected, making a constructive contribution to the society of which they are part.

These are good intentions. Yet American business has been shockingly ineffective in making them known and understood. While the professional manager has been working with brilliance and energy at his material assignment, others have been working with equal energy to destroy the reputation of the business man, discredit his achievements, subject him to increasing government regulation and interference, and ultimately to wreck the uniquely successful system of American capitalism.

### *The Ideological Challenge*

One of the great unanswered challenges to professional managers is the challenge of recognizing that ideological forces, no less than market forces, have decisive effects on the survival, growth, and profitability of a business.

The ideological challenge is definitely more difficult to deal with—because it is unfamiliar. The more we businessmen are attacked on the political front, the more we seem to withdraw, with our feelings hurt, to work harder on the material assignment of producing goods. But this will not solve the problem.

The problem of political attack can-

*(Please turn to page 34)*



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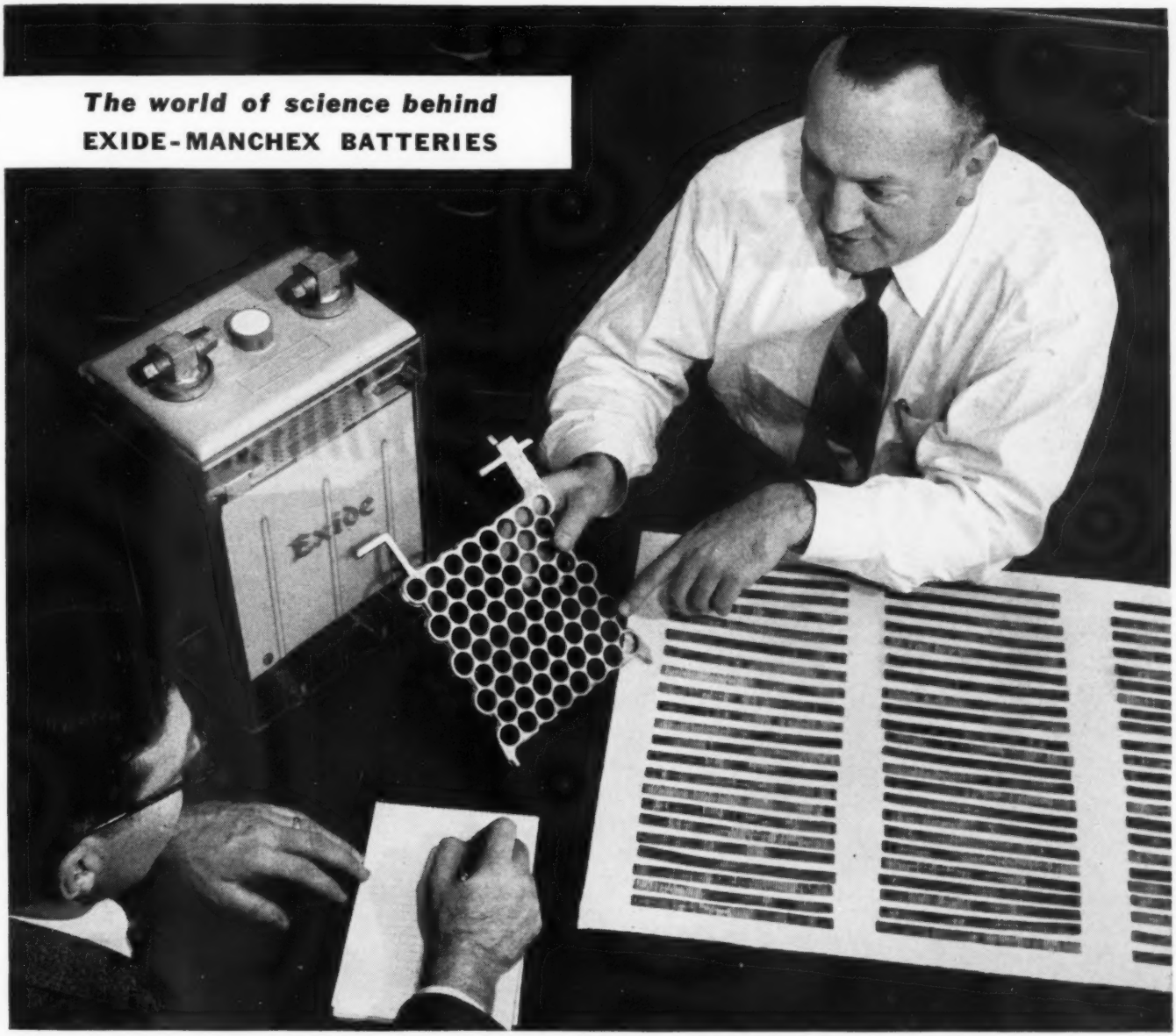
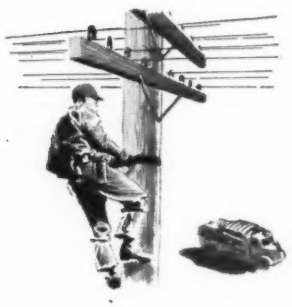
***The world of science behind***
**EXIDE-MANCHEX BATTERIES**




*Being interviewed is Dr. H. J. Strauss, Chief Product Engineer*

## *"Plates last longer because they're 5 times bigger"*

*At the Exide Laboratories*—**Reporter:** Just what are all those lead strips?



**Strauss:** Here we've taken the spiral lead buttons from a single Exide-Manchex positive plate and unrolled them on this table. This total area is actually five times the plate size.

**Reporter:** I see the strips are corrugated on one side. Is that to increase the surface area?

**Strauss:** Yes, and also to give the electrolyte free access into the interior of the spiral buttons.

**Reporter:** How does this feature affect battery performance?

**Strauss:** It means each part of the surface of the positive plate works easier to produce electricity. An Exide-Manchex can coast where many another battery is forced to strain. And the active material lasts years longer than it otherwise would.

**Reporter:** Is this construction available in any other battery?

**Strauss:** No, only in the Exide-Manchex.

**Reporter:** Obviously this is an important feature of the Exide-Manchex Batteries.

**Strauss:** Yes it is, but it's only one of many engineering details that contribute to their long life.

**Note to battery users:** Whenever you order batteries for floating service applications or the equipment that requires such batteries, be sure to specify Exide-Manchex. Write for detailed bulletin. Exide Industrial Division, The Electric Storage Battery Co., Philadelphia 2, Pa.

THE ELECTRIC STORAGE BATTERY COMPANY **Exide**®



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GUSTAV HIRSCH ORGANIZATION, INC. - CONSULTING ENGINEERS AND CONTRACTORS
1347 WEST FIFTH AVENUE
COLUMBUS 12, OHIO

January 7, 1957

Automatic Electric Sales Corp.
1033 West Van Buren Street
Chicago, Illinois

Attn: Mr. D. H. Deaver, President

Subj: Warren Telephone Company, Warren, Ohio
SATT Equipment

Dear Sir:

The initial installation of SATT equipment for subject company was placed in service on December 2, 1956.

Approximately fifty percent (50%) of our outward toll is being processed by this equipment and our toll relief was immediate.

We want to thank you for the superior performance of your engineering and installation staff on this project and it attests to the excellent performance of AE equipment and personnel.

Very truly yours,
GUSTAV HIRSCH ORGANIZATION, INC.

R. E. Johnson
Chief Equipment Engineer

REJ/cjw

cc; Mr. Hirsch
Warren Telephone Company

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SATT can do the same for you—
you'll be happy with the job too!

If *you* can see an automatic toll ticketing problem coming up, ask us about it. Our experienced engineers will be glad to help you—and you'll be mighty glad they did! Address: *Automatic Electric Sales Corporation, 1033 W. Van Buren St., Chicago 7. Or call HAymarket 1-4300.*

AUTOMATIC ELECTRIC

A MEMBER OF THE GENERAL TELEPHONE SYSTEM

ONE OF AMERICA'S GREAT COMMUNICATIONS SYSTEMS

not be solved simply by supplying good products at good prices, by providing good jobs, by paying good dividends and increasing the value of stocks, by having arrangements that are profitable to suppliers, distributors and dealers, by collecting and paying big taxes, by obeying the law, and by giving away to charity a lot of money some people seem to think we stole.

Those very businesses which have been most successful in doing the most for the largest number of individual citizens are the very ones that have been singled out, over the years, as the prime targets for political attacks, congressional investigation, union invective, and all the other forms of publicly discrediting their intentions and achievements. But the same problem extends to every business.

It will be argued that businessmen have always had to contend with political demagogues and special interest groups, and the American business system is still going strong. Executives who lived through the stormy era of the depression, or have read about the trust-busting era, may be inclined to say that today's attacks on business are harmless by comparison. I think this is blinding ourselves to serious dangers, and refusing to face our full range of managerial responsibilities.

### *People Expect More*

These past experiences are worth exploring for helpful strategies and ideas, but they do not have much to do with today's problems. The whole political and social environment in which business operates has changed, is changing, and will continue to change.

To put it simply, people expect more of us businessmen, and the skills which served an earlier day are not adequate for today.

Back in the 1920's, the American businessman was the idol of the world. He won this position of honor by a truly great achievement: he mastered the fundamentals of low-cost production of things that people wanted and could buy in quantities—when that was the really important advance to be made in raising the level of living.

But with the passing of the years there have been many national experiences which have changed the people's views and expectations of business. There was a shattering depression in which the businessman was the political scapegoat. There were the New Deal, the Fair Deal, and the rise of the politically powerful unions.

There was a war—when the people got the idea that production miracles are easy—and the postwar prosperity which has made material abundance appear so automatic that it can almost be taken for granted.

There was the new recognition of scientific research, which has raised the people's expectations to the level of fantasy.

Without commenting on whether these developments have, on the whole, been good or bad for the United States, they happened—and the public is no longer astonished or even satisfied with outstanding economic performance.

Increasingly the people expect business not only to satisfy their material wants and desires, but also to satisfy a whole range of psychological and ethical expectations. Most of these expectations are basically reasonable, and it is the responsibility of the manager and all his associates to recognize them.

### *Popular Expectations of Business*

As customers, people expect not only a good product at low cost. They also expect the excitement of spectacular new features and services, unfailing courtesy on the part of the salesman, and the ethical assurance that they are dealing with a fair and honest company.

As share owners, they expect not only profits and appreciation of the worth of their investment. They also are beginning to expect information, participation, and pride of ownership in a creative company.

As employes, people expect not only a steady job with good pay, benefits, and working conditions. They also expect full information, dignity, participation, recognition, and a rewarding man-to-man association with the manager and others.

As suppliers, distributors, and dealers, people expect not only an opportunity for profit and steady business in competition with others. They also expect recognition of their dignity and standing in the community, warm and friendly associations, and the assurance that they are dealing with a fair-minded company.

As citizens, people expect not only the kind of material performance that contributes toward a prosperous economy and the national security. They also look to a company to measure up to their ethical and social expectations, as represented by such things as its genuine interest in people and the community; its emphasis on human considerations; its really dedicated work in charity and other worthwhile causes; its obedience both in the spirit and the letter of the law; its recognition that what other people think is important.

In other words, over and above material performance, the people expect business to help achieve their personal aspirations, and the permanent aspirations that are associated with the United States of America.

This catalog of popular expectations of business is by no means complete, but it indicates the challenging range of responsibilities outside the traditional economic area. To balance and satisfy such a diversity of demands, and be sure that the people know and believe that the manager and his associates are making decisions in the balanced best interests of everyone, will require the development of skills which are not commonly found in managers today.

In fact, it might be argued that nobody now alive could satisfy everyone on these practically unlimited terms, nor have I discussed what business has a right to expect in return. One of the challenges to business today is to help bring the people's expectations into line with what is actually possible, while doing everything that can be done to raise the level of business performance ever higher.

I have no sure-fire prescription to offer at this juncture. It would seem to me, however, that the ultimate solutions will develop along these lines.

### *Learning What Is Right*

First, we in business—managers and non-managers—will have to become far more sensitive to the social and political currents and undercurrents in this country.

We will have to become students, humbly seeking to know more about the economic, political, and ethical principles that vitalize this new "people's capitalism."

We need to develop a greater feeling for the human considerations that loom so large in the final outcome of all our efforts.

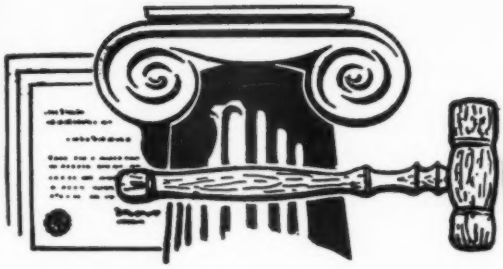
When we have developed this greater sensitivity and knowledge, we can be more confident that our decisions and actions are what we earnestly want them to be—in the balanced best interests of all.

### *Studying the Future*

Second, we businessmen need to study the future. America is undergoing profound change and growth. The company that does not anticipate these changes and plan accordingly is going to find itself like a fish out of water, in a strange and hostile environment.

We must anticipate the major social, political, and economic trends and help to shape them. We must also help the public understand these changes and

*(Please turn to page 48)*



# Courts and Commissions

## Ill. Commission Approves Sale of Independent

The Illinois Commerce Commission on Mar. 21 approved the purchase of the Hamel Mutual Telephone Co. by the Madison Telephone Co., Bethalto.

The purchase had been pending with the commission since early this year when the Madison company filed a petition requesting approval to take over operation of the exchange at Hamel.

A spokesman for Shelby Klingel, manager of the Madison Telephone Co., said the company plans to construct a new building and outside plant facilities at a cost of $75,000 for the exchange at Hamel and to convert to automatic by the end of 1957. The exchange has approximately 240 subscribers.

The commission recently approved the sale of the Bethalto exchange by the Madison Telephone Co. to Illinois Bell Telephone Co. (TELEPHONY, Mar. 9, p. 40). The latter is scheduled to take over the Bethalto exchange on July 1.

A spokesman said the headquarters for the Madison company will be moved to Hamel after the Bethalto exchange is taken over by Illinois Bell.

## N. D. Commission Authorizes Sale of Eight Companies

The North Dakota Public Service Commission has authorized the Souris River Telephone Mutual Aid Corp. of Velva, to buy telephone properties from eight other companies, it was reported on Mar. 23 (TELEPHONY, Jan. 26, p. 34).

In related action, the commission has authorized the Souris River company to get a long-term loan from the Rural Electrification Administration, to establish a revised schedule of rates for telephone service and to charge 25 cents, in addition to member schedules, for service furnished to nonmembers.

Authorization for purchase of existing properties covers holdings of the Lone Star Rural Telephone Association, Glenburn; Bantry Community Exchange; Landa Telephone Co.; Upham Telephone Co.; Grovers Farmers Line, Tolley; German Telephone Co., Harvey; Farmers Pioneer Telephone Co., Sherwood; Whitney Farmers Telephone Co., Sherwood.

## General of SW Announces Four Texas Rate Raises

The following rate increases became effective in exchanges of General Telephone Co. of the Southwest in Texas during the month of March 1957:

| | *Old* | *New* |
|---|---|---|
| *Kyle*, conversion to automatic, 182 stations | | |
| One-party business .... | $6.75 | $10.00 |
| Two-party business .... | 5.75 | 7.50 |
| One-party residence .... | 3.25 | 5.00 |
| Two-party residence ... | 2.75 | 4.50 |
| Four-party residence ... | — | 4.00 |
| *Miami*, conversion to automatic, 297 stations | | |
| One-party business .... | 5.50 | 8.50 |
| Two-party business .... | 4.50 | 7.00 |
| One-party residence .... | 3.50 | 4.75 |
| Two-party residence ... | 3.00 | 4.00 |
| Four-party residence ... | 2.50 | 3.50 |
| *Happy*, automatic, EAS established, 204 stations | | |
| One-party business ..... | 9.00 | 10.25 |
| Two-party business .... | 7.50 | 8.75 |
| One-party residence .... | 4.50 | 5.00 |
| Two-party residence ... | 3.75 | 4.25 |
| Four-party residence ... | 3.25 | 3.75 |
| *White Deer*, magneto, 252 stations | | |
| One-party business .... | 4.00 | 9.50 |
| Two-party business .... | 3.50 | 8.00 |
| One-party residence .... | 2.75 | 5.25 |
| Two-party residence ... | 2.50 | 4.25 |

## New York Original Cost Bill Killed in Committee

A bill designed to block a $55,400,000 rate increase sought by the New York Telephone Co. was killed by the New York Senate's finance committee on Mar. 29 (see *In the Nation's Capital*, this issue).

The measure, which earlier had been approved by the Assembly, would have permitted the New York Public Service Commission to regulate telephone and railroad rates on the same basis as such other public utilities as gas and electric companies, using capital actually invested or original cost as the rate base, instead of replacement value.

The state court of appeals last year interpreted a 45-year-old state law as requiring the commission to consider reproduction cost in setting telephone and railroad rates. New York Telephone is currently seeking a rate raise on the basis of the new formula ordered by the court.

As the state legislature was winding up its 1957 session, Governor Harriman announced he was considering calling a subsequent special session to deal with the telephone rate issue. The governor charged that the failure to enact the bill to block the increase had given telephone and railroad companies "a privilege position for the exploitation of consumers."

## Southern Bell Refused Rehearing in Louisiana

The Louisiana Supreme Court on April 1 refused—with two dissents—to grant a rehearing to the Southern Bell Telephone & Telegraph Co. from an order directing the company to reduce its intrastate long distance rates, and to cut paystation calls from 10 cents to five cents (TELEPHONY, Mar. 9, p. 44).

Chief Justice John B. Fournet and Associate Justice James D. Simon, dissented, holding that the case was of such importance that it should be reargued before the high tribunal.

The company had sought a rehearing on the high court's majority decree handed down on Feb. 25 affirming action of the Louisiana Public Service Commission in ordering the rate reductions.

Refunds to the public on the intrastate long distance tolls and on the paystation charges were ordered by the commission.

In connection with the decision, W. K. Boardman, Jr., Southern Bell vice president and general manager for Louisiana, issued the following statement:

"It is most difficult to believe that Southern Bell is now being compelled to operate under the kind of rates in Louisiana that will force its earnings to a much lower level than permitted to other utilities in this state and elsewhere.

"No industry can operate successfully at arbitrarily reduced prices for its product in the face of increased



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prices it must pay for everything it requires. The inevitable result in any business would be an inferior product or inadequate service. The telephone industry is no exception.

"We are, of course, starting at once to comply with the supreme court's decision. That is, we are beginning to change the coin telephones to the five cent basis and to calculate the long distance and other refunds due.

"In addition we are trying to appraise some of the graver problems presented by the decision. For example, how we are to meet the public's demand for service expansion and whether we can continue to provide proper job opportunities for our employes."

## N. Y. Commission to Hear Two Requests for Financing

The New York Public Service Commission was scheduled to hear on Apr. 8 the petition of the General Telephone Co. of Upstate New York Inc. for authority to issue and sell $800,000 in mortgage bonds and 14,000 shares of common stock without par value.

The commission was also to hear on April 9 the petition of Chenango & Unadilla Telephone Corp. for permission to issue one million dollars in convertible debentures.

## 1957 Convention Calendar

| *Association* | *Date* | *City* | *Hotel* |
|---|---|---|---|
| Nebraska | April 23 and 24 | Lincoln | Cornhusker |
| Indiana | May 8 and 9 | Indianapolis | Claypool |
| Wisconsin | May 15 and 16 | Madison | Loraine |
| Communications Section, Association of American Railroads | May 21, 22 and 23 | Toronto, Ontario, Canada | Royal York |
| Illinois | May 22 and 23 | Peoria | Pere Marquette |
| Kansas-Missouri* | May 27 and 28 | Kansas City, Kan. | Town House |
| Pennsylvania | June 4 and 5 | Buck Hill Falls | Buck Hill Falls Inn |
| Maine-New Hampshire-Vermont* | June 4, 5 and 6 | Portsmouth, N. H. | Wentworth-by-the-Sea |
| California | June 5, 6 and 7 | Los Angeles | Ambassador |
| Washington-Oregon* | June 13, 14 and 15 | Spokane, Wash. | Davenport |
| New York | June 17, 18 and 19 | Schroon Lake | Scaroon Manor |
| Tennessee | Sept. 12 and 13 | Nashville | Hermitage |
| Arkansas | Sept. 16 and 17 | Hot Springs | Arlington |
| Michigan | Sept. 17, 18 and 19 | Grand Rapids | Pantlind |
| Rocky Mountain | Sept. 19 and 20 | Salt Lake City, Utah | Utah |
| West Virginia | Sept. 30 and Oct. 1 | Davis | Blackwater Lodge |
| North Carolina | Oct. 3 and 4 | Pinehurst Carolina | |
| USITA (Annual convention) | Oct. 14, 15 and 16 | Chicago | Conrad Hilton |
| Virginia | Oct. 24 and 25 | Roanoke | Roanoke |
| South Carolina | Nov. 4 and 5 | Clemson | Clemson House |
| Alabama-Mississippi* | Nov. 11 and 12 | Birmingham | Thomas Jefferson |
| Oklahoma | Nov. 21 and 22 | Oklahoma City | Huckins |
| Florida | Dec. 2 and 3 | Miami Beach | Balmoral |

*Joint Conventions

## Authorizes Raise in Rates For Kansas Independent

An increase in rates has been granted the Ellinwood Telephone Co., Inc., by the Kansas Corporation Commission.

The company made application for the raise a year ago.

One-party business rates were raised 75 cents to $4.25.

The local newspaper reported that, as nearly as can be ascertained, this is the first change in Ellinwood's telephone rates in 37 years.

## Alabama Commission OKs Dissolution, Rate Raise

The Alabama Public Service Commission on April 4 authorized one telephone company to discontinue operations and approved a rate increase for another.

Owner James Sandlin asked permission to abandon the Danville Telephone Co. so that Southern Bell Telephone & Telegraph Co. might install a more modern system. The Danville exchange had served 35 families in the area.

The commission granted the Coosa Valley Telephone Co. a general rate increase (TELEPHONY, Mar. 30, p. 39). The company recently installed an automatic system to serve some 1,272 stations.

Rates for one-party business service were increased from $5.50 to $7.50 and one-party residence service was raised from $3.50 to $5.00.

## N. Y. Bell Gains Rate Raise On Connecticut Operations

Rate increases amounting to approximately $48,400 on April 1 were authorized the New York Telephone Co. for its Byram and Greenwich, Conn. exchanges by the Connecticut Public Utilities Commission (TELEPHONY, Jan. 26, p. 35).

New York Bell submitted a statement showing it had a total loss on 1956 operations in Connecticut amounting to $218,496, composed of a profit of $160,870 on interstate, and a loss of $379,366 on intrastate operations.

In arriving at its rate decision, the commission stated it has not formally accepted the 1947 Telephone Separations Manual with 1952 and 1956 addenda, published by the National Association of Railroad & Utilities Commissioners. However, it said, for the purpose of this case, it accepted as reasonable the methods used by the company in determining the results of its operations in Connecticut for 1956.

The commission said in a previous rate decision it issued on an application by New York Telephone Co., dated July 22, 1952, it stated and in this case reaffirmed:

". . . If this commission were to fix a schedule of rates and charges for the company's Connecticut intrastate operations higher than the rates charged in comparable exchanges having the same number of connected telephones in the company's New York state operations, it would place an unrealistic and unjustifiable emphasis on the accident of a political boundary separating the New York segment of the company's operations from the Connecticut segment . . ."

The commission also noted that the company plans to furnish dial service to all Connecticut subscribers by June, 1957 and that it will realize substantial savings in operating expenses upon conversion.

## Approves Wisconsin Sale

The Wisconsin Public Service Commission authorized the La Valle Telephone Cooperative on Mar. 15 to take over property of the La Valle Telephone Co. and begin a $194,700 reconstruction program (TELEPHONY, Jan. 12, p. 36). The commission set Sept. 1, 1958 as the completion date for conversion to automatic for the new company.



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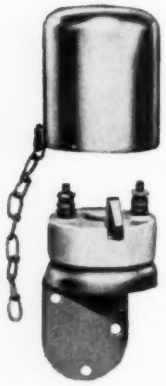

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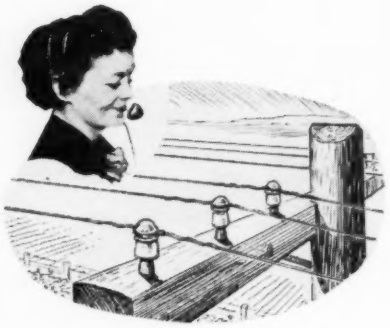

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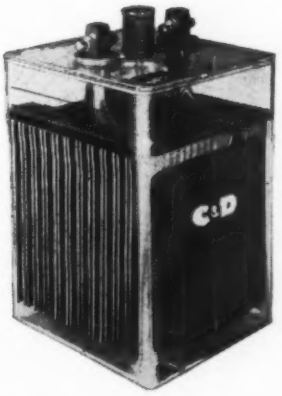


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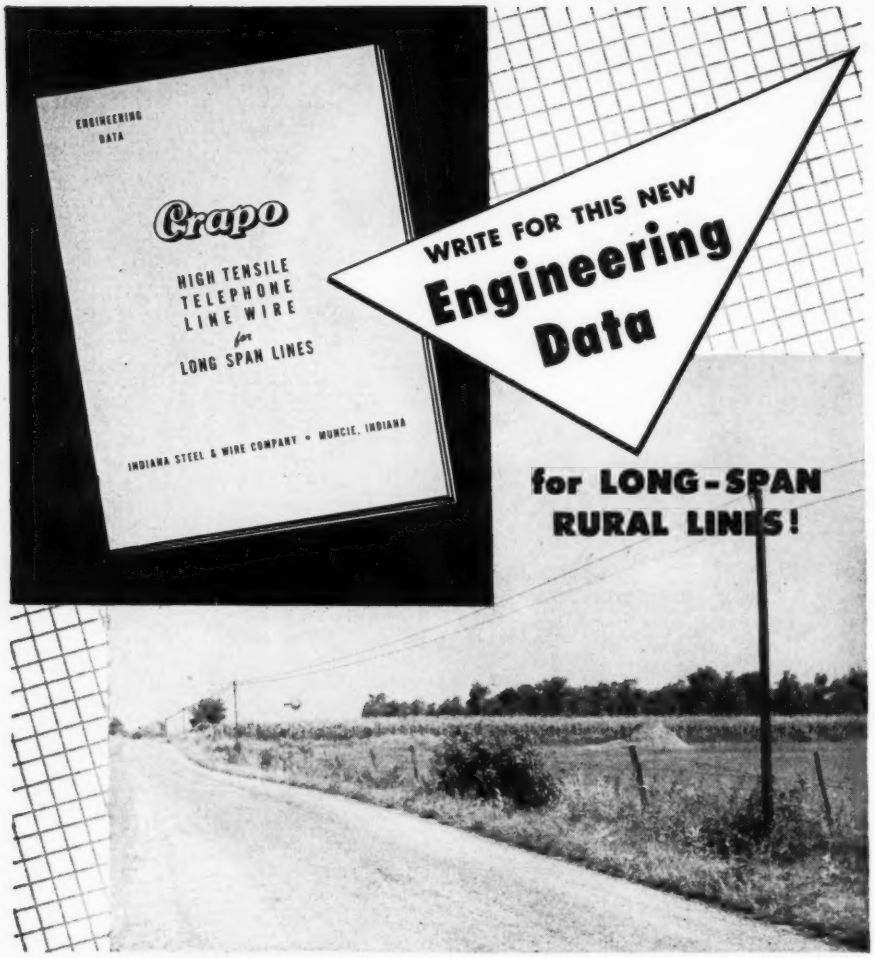


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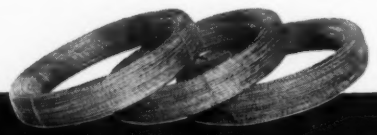

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# IN THE NATION'S CAPITAL

*Continued from page 19*

of last July, well over half—55 per cent to be exact—had dial telephones; 18 per cent had common battery telephones, while the remaining 27 per cent were still cranking up the sidewinders. This compares with 51 per cent dial the previous year and 45 per cent dial in 1954. And so it would appear that Reuben's service standards are improving even more rapidly than his monthly rates.

### *Merger Notice Bill*

Operating telephone companies and other public utilities will not be affected by a bill in the House of Representatives to give the government notice when they plan to merge with other companies. Such a bill has so far been recommended by the House Anti-trust Sub-committee and has the blessings of Attorney General Brownell. But it specifically exempts any companies which are already required to give notice and obtain approval of government regulatory agencies before merging.

Since this is required of telephone companies under the Federal Communications Act, they will not be affected if the bill should become law. Also exempt for the same reason are gas and electric company mergers (regulated by both the Federal Power Commission and the Securities & Exchange Commission), railroads (regulated by the Interstate Commerce Commission), airlines (regulated by the Civil Aeronautics Board), and shipping (regulated by the Federal Maritime Board).

The bill contains a number of other exemptions, for such things as stock acquisitions amounting to less than 10 per cent of a company's total stock; acquisition of government securities; transactions between parent companies and subsidiaries; stock acquisitions by charitable, religious, and educational corporations; and acquisition of underdeveloped or partially developed mineral, mining, or timber property.

The bill is designed to make it easier for the government to block mergers that might lessen competition substantially.

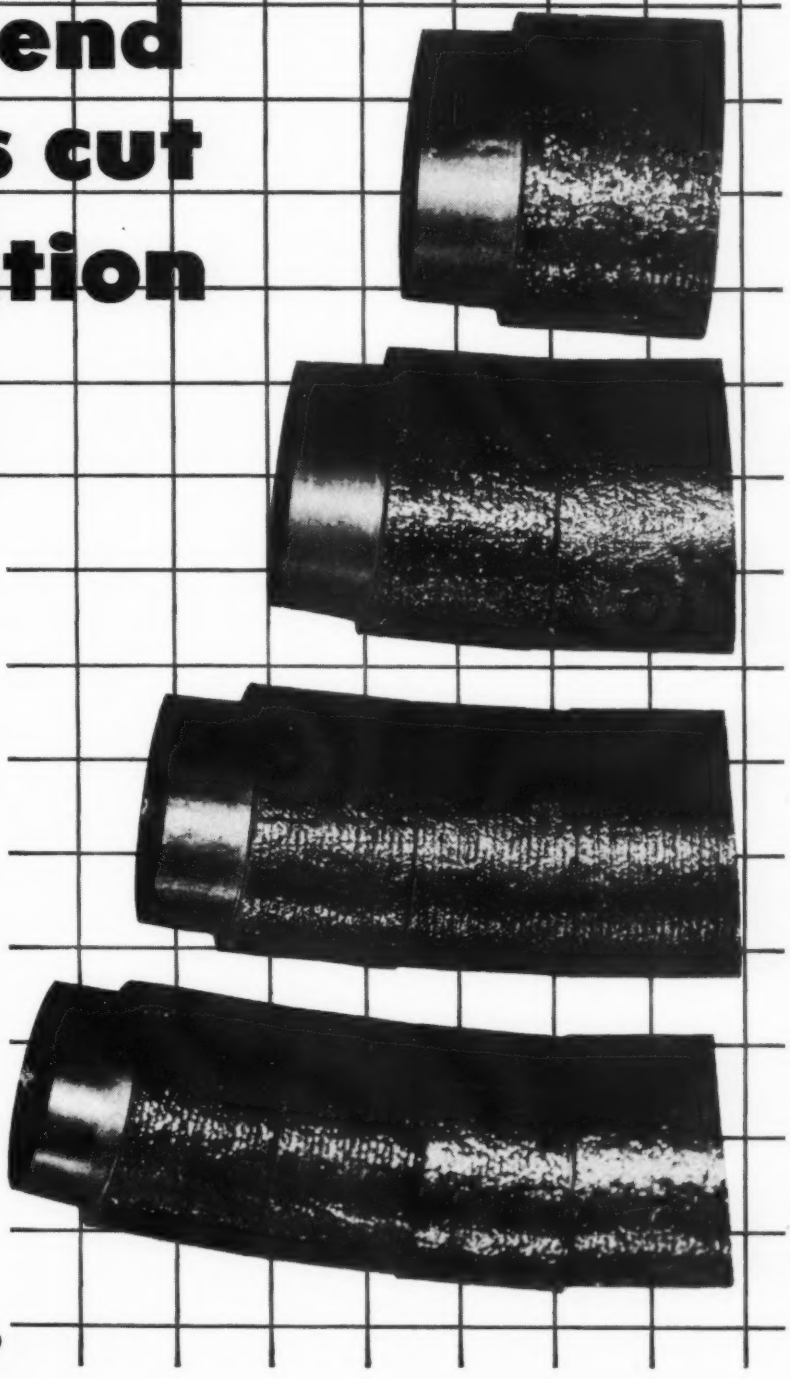
## USITA Releases Statistics On Independent Industry

The United States Independent Telephone Association's April 5 member letter, which was accompanied by the latest printing of its brochure on the Independent industry, "An American Story," presented the following statistics:

The Independent telephone industry

*(Please turn to page 43)*

# These bend sections cut installation costs



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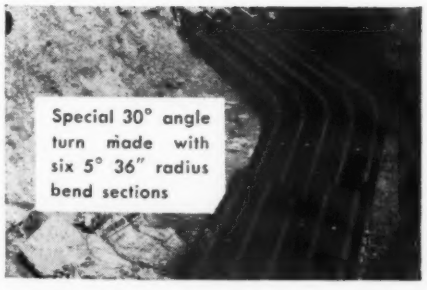

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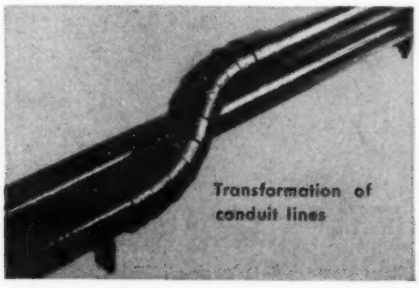
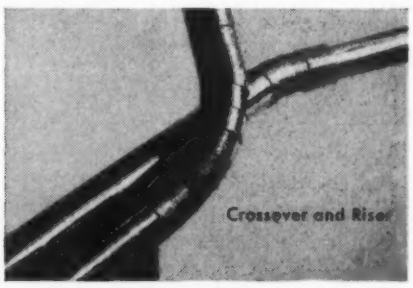


Transformation of conduit lines



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*by Gerald C. Gaydos, Inside Sales—Chicago*

In my spare time I like to do crossword puzzles, but there's never any puzzle about the advantages of ordering supplies from Stromberg-Carlson. No matter where you're located, you're protected by a double guarantee on the fine products you order from Stromberg-Carlson . . . ours, and the maker's. This way, when emergencies make special demands—you're not alone. You find **two** solid companies right beside you, eager to help. That's how our 62-year reputation in the industry has grown. That's why it pays you to order from Stromberg-Carlson—leader in the research for new and better telephone equipment. We'd like you to know we appreciate your support.

### Reserve lead keeps battery young

Inside the unique lead buttons in an Exide-Manchex positive plate there's a coil of reserve lead designed to prolong battery life. Over the years, as this lead is needed, it goes into action, instantly and automatically.

The unique thing about Exide-Manchex construction is that the reserve lead does not have to support the plate. The spiral lead buttons are tightly locked into a cast lead-antimony alloy grid several times more rigid than pure lead. Hence the reserve lead can be completely consumed while the plate retains its strength.

Only Exide-Manchex Batteries have this construction. In addition, they feature a plastic jar that saves weight and space, high level electrolyte for less frequent filling, and huge bottom reservoir that virtually insures against sediment shorts.

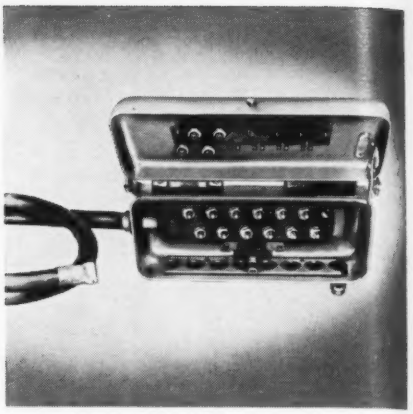
To be sure of top quality, specify Exide Manchex Batteries when you order through your Stromberg-Carlson representative.

### Cable terminal for rural areas

Cook Electric Company's 6-pair "Stranterm" cable terminal is designed particularly for the limited distribution required in rural areas.

Rugged construction, ease of installation, convenience in servicing and maintenance-free operation are some of the advantages you get with the Cook "Stranterm."

This terminal can be installed unprotected and be protected later on a pair-by-pair basis with Cook Minigap or Mytigap Arresters. It is available with a 3½-foot 24-gauge cable stub of lead or plastic-sheathed cable.



Cook 6-pair "Stranterm" cable terminal.

The "Stranterm" cable terminal is compact, light in weight, and very convenient for connecting or changing drops.

### Distribution wire needs no cross arms

There are several reasons you can enjoy lower installing costs with this Whitney Blake multi-pair distribution wire.

Because it's self-supporting, it needs no cross arms. And it's easy to string because it's lightweight and comes in long lengths—up to 4000 feet per reel.

Self-supporting distribution wire has built-in messenger.

This wire has excellent electrical characteristics: low-loss transmission, low capacitance, high dielectric strength.

Its polyethylene insulation provides excellent weather resistance.

The wire is available in 3, 6, 11 and 16 pairs. The conductors are of #19 A.W.G. soft copper.

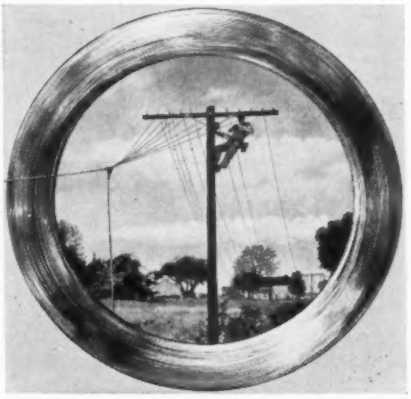
Your Stromberg-Carlson representative will gladly introduce you to the economy of this wire. Call him.

XUM

**This top performer brings you low-budget operation**

If you'd like to reduce the cost of installing and maintaining telephone lines, may we suggest a rugged wire that staunchly defies wind, ice, and snow?

Copperweld Telephone Line Wire is known as a faithful friend, having wonderful transmission qualities and long, rust-resisting life. It lasts and lasts and lasts—saves you maintenance or replacement costs.



Copperweld Line Wire "talks better," and cuts your maintenance costs.

For short subscriber loops and secondary toll lines, we recommend .080"-30 E.H.S. and for toll lines and long subscriber loops, .104"-40 H.S.

Order Copperweld from your Stromberg-Carlson representative.

---

*Did you know* . . . that the Stromberg-Carlson general catalog has more than 100 pages of maintenance and construction supplies alone? You can do *all* your business "under one roof" and find the same quality and reliability in every item.

---

*Distributed by*

**STROMBERG-CARLSON**

A DIVISION OF GENERAL DYNAMICS CORPORATION

Sales Offices: Atlanta 6, Chicago 6, Kansas City 8, Rochester 3, San Francisco

is now comprised of 4,400 companies serving 10,870 exchanges and more than 9 million telephones.

The latest official statistics, as of Dec. 31, 1956, which have just been compiled by the USITA, show that total plant investment increased from $2,042,822,000 in 1955 to $2,323,052,077 in 1956. Due to mergers, acquisitions, and consolidations the number of Independent companies decreased from 4,714 to 4,390.

Plant investment, number of stations, and number of employes have grown rapidly since 1945. Sixty-nine per cent of Independent telephones now are dial-operated.

The USITA comparison of Bell System and Independent companies, as of Dec. 31, 1956, follows:

| | *Independent*[1] | *Bell System & Bell Associated*[2] | *Total* |
|---|---|---|---|
| Total telephones | 9,111,763 | 51,343,700 | 60,455,463 |
| No. of operating companies | 4,390 | 23 | 4,413 |
| No. of exchanges | 10,870 | 6,900 | 17,770 |
| Plant investment | $2,323,052,077 | $17,555,589,862 | $19,878,641,504 |
| Gross revenues | $ 648,221,533 | $ 5,966,189,971 | $ 6,614,411,504 |
| No. of employes | 100,924 | 653,000 | 753,924 |

[1]Including Independent companies in Continental United States, Alaska, Puerto Rico and Hawaii.

[2]Including the operating subsidiaries of American Telephone & Telegraph Co. and Southern New England Telephone Co. and Cincinnati & Suburban Bell Telephone Co. (associated with the Bell System through minority ownership) and Bell service companies.

The USITA also included a sample news release with the above information which facilitates giving the statistics to local newspapers. It was stated, too, that individual companies might want to include additional information about their operations in releases to the papers.

## Name J. R. Fowler to Carolina T&T Post

J. R. Fowler, who has been district commercial manager of the Fayetteville, N. C., district of the Carolina Telephone & Telegraph Co. since August 1953, has been appointed assistant secretary and assistant treasurer of the company, and is stationed at the home offices at Tarboro, N. C.

Prior to going to Fayetteville, he was commercial supervisor at the company's general offices in Tarboro. He began his telephone career in the company's commercial department in 1949, following graduation from North Carolina State College, where he received a B.S. degree in engineering.

## Often Overlooked

"In a nation so large as the United States and so varied in social and economic traditions and conditions, complete centralization of power in the federal government is undesirable and probably unworkable. It would be well to consider carefully the implications not only of the Fifth but also of the Tenth Amendment: 'The powers not delegated to the United States by the Constitution, nor prohibited by it to the states, are reserved to the states respectively or to the people!' "—WILLIAM HENRY CHAMBERLIN, *in The Wall Street Journal.*

## Mountain States to Serve Yellowstone National Park

Signing of contracts by the Mountain States Telephone & Telegraph Co. to purchase existing telephone and telegraph facilities located in Yellowstone National Park and to assume the responsibility of furnishing communication services throughout the 3,472-square-mile area, was announced in Casper, Wyo., recently.

The two contracts, one purchase and sale, the other granting the telephone company the right to provide service, were signed in Casper by company and park officials. The purchase was reported awaiting the approval of the Federal Communications Commission.

The National Park Service had operated the telephone system for about 50 years. Approximately 1,000 telephones are in the park.

## Nebraska Company Files Incorporation Papers

Antelope Valley Telephone Association, Hay Springs, Neb., on April 2 filed articles of incorporation as a nonprofit telephone company.

Incorporators are W. W. Hahn, Clifton Hale, Gus Lembrich, Raymond Alcorn, Leonard Scott and Ralph Maloney.

## Obituary

GERALD CASS, 44, owner of the Hancock (Minn.) Telephone Co., died on Mar. 22, of a heart attack. Mr. Cass was also associated with Communication Consultants at Fargo, N. D. Surviving are his widow Nora, and two daughters.

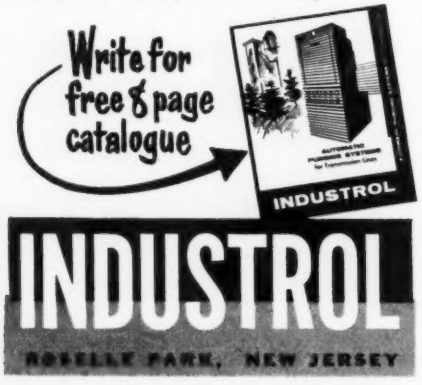
**KENTUCKY DIVISION OF SOUTHERN BELL INSTALLS NEW TYPE PURGING SYSTEM**

Faced with the need for exceptionally dry air in local and toll cables to eliminate interruption of service due to moisture, Kentucky Division of Southern Bell Telephone Company, Louisville, Ky., has installed Industrol Automatic Purging Systems. These units are . . .

Flexible, Compact,
Maintenance Free, Efficient.

Industrol Dryers have been developed specifically for use in remote radar and for other large and small transmission line installations.

Your Industrol representative can answer your questions regarding specialized dryers developed to handle your own drying requirements. Contact your local Industrol Salesman or write directly to Department 321, Industrol Corporation, Roselle Park, New Jersey.




# ALUMINUM SHEATHING OF CABLE

*Continued from page 23*

sure is transferred to the die and core die. In a full operating cycle, from the time extrusion is stopped, the rams withdrawn, new billets inserted and extrusion resumed, the pressure acting upon the die and core die as well as upon the annulus of aluminum approaching formation of the sheath alternates over a wide range. When the pressure is released from the annulus through the relief of pressure in the hydraulic cylinders, a reduction in the wall thickness of the sheath is caused. Simultaneously, both the die and core die, being relieved of pressure, exert additional force onto the press stop mark or "bamboo ring" section.

These variations in pressure create the formation of the "bamboo ring." The higher the pressure differential, the more pronounced is the "bamboo ring." The design features of this press and its tools, and extrusion at high temperature aid in the reduction of the extrusion pressure and minimize the pressure changes that occur at the dies and form the "bamboo ring."

In addition to the above mentioned elastic changes created by pressure variations, there is the thermal effect of the intensive cooling of the core die, die and the extruded sheath; these further aggravate the shrinkage at the "bamboo ring" and its adjoining sections.

These two effects, elastic expansion and thermal transfer, have been compensated for by the introduction of a hydraulically operated "ratchet spanner" which facilitates the opening and closing of the spacing between die and core die and compensates for the change in thickness of the sheath when the press is stopped. This operation is done by the opening or closing of a threaded section which supports the die. This technique facilitates the adjustment of wall thickness while the press is in operation as well as:

(1) To relieve the pressure between die and core die when the press is stopped.

(2) To compensate for the cooling of the die and core die which causes shrinkage of the aluminum when the press is stopped.

(3) To permit proper control of wall thickness at the "bamboo ring" section.

Following are the technical data on the aluminum sheathing press:

Press capacity—1,760 tons
Operating pressure of press, pumps and piston accumulator—4600 psi
Operating pressure of air accumulator and air compressor—225 psi
Diameter of hydraulic ram—33 inches
Maximum stroke of hydraulic ram—39 inches
Aluminum billets—7 inches diameter x 18 inches long
Weight of two aluminum billets per charge—126 pounds
Extrusion material—Commercially pure aluminum (99.5 per cent)
Extrusion pump capacity (at 4,600 psi)—2 x 110 liters (29.1 gallons) per minute each in 31 steps of approximately 3.6 liters (0.95 gallons) per minute
Expandable high pressure accumulator capacity—150 liters (39.6 gallons)
Accumulator pump capacity—56 liters (14.8 gallons) per minute
Aluminum extrusion rate — 0 to 63 pounds per minute in 31 steps
Billet heating capacity—2 units—195 kw each
Container heating capacity—2 units—45 kw each

### *Operation of Extrusion Press*

The two induction furnaces for billet heating work in parallel; each furnace carries three billets and heats them to a temperature of 500 C. A signal at the master control station indicates to the operator when the billets have reached the required temperature. The billet transports are energized by operating a push button at the master control station and the billets are discharged from each furnace.

The billets are then rolled out of the stainless steel transfer trays which carry them through the furnaces and are placed in front of the screw-operated pushers which move the heated billets into the billet holders (clamps) of the hydraulically operated swinging arms mounted on the press. During this cycle a new supply of billets is rolled from the holding tables onto transfer trays, forwarded into the induction furnaces and another heating cycle is started.

Less than one minute before the billets are to be swung into the press, a second push button is operated which starts the water sprays of the screw-operated pushers and cools one end of each billet from 500 C to 400 C.

After this cooling cycle, which is controlled by time relays, is completed, the hydraulically operated swinging arms of the billet loaders automatically place the "tapered-heated" billets in front of the press containers. This swinging motion can only take place after the extrusion rams have been fully withdrawn and safety interlocks, operated by the withdrawn rams, activate the swinging arms.

By turning the servomechanism controls at the master control station

# IMAGINE! $162.25 PER MONTH*

## at this out-of-the-way location

You'd be surprised at some of the unlikely locations that turn out to be profitable paystation sites. Take this intersection in Fort Wayne, Indiana. It's out of the main business district, and traffic is light. Yet the telephone company, after careful checking, saw good revenue potential here. So an AUTELCO paystation was installed. The result speaks for itself:

**Average gross revenue per month for the last six months was an amazing $162.25.*

Many locations in your area could prove as profitable as this Fort Wayne intersection. Our Survey Simplifier will help you determine the right locations. For your copy, write: *Automatic Electric Sales Corporation, 1033 W. Van Buren St., Chicago 7. Or call HAymarket 1-4300.*

**Circular 1877 gives you detailed information on the new AUTELCO "80" series paystations. Write to the above address.**

AUTOMATIC ELECTRIC

A MEMBER OF THE GENERAL TELEPHONE SYSTEM

ONE OF AMERICA'S GREAT COMMUNICATIONS SYSTEMS



XUM

**Telephone batteries engineered for—**

**extra-dependable power . . . plus!**

## C & D PlastiCell®

Extra-dependable packaged power! Extra advantages, too!

The best "salesmen" for C & D PlastiCell® batteries, you'll find, are the large number of friends these *advanced-engineered* batteries have made among telephone men in important exchanges across the country. C & D PlastiCell telephone batteries give you much more than extremely reliable power. You also get:

- **One-piece, permanently-sealed plastic case.** Entire unit is shock-resistant . . . lighter and more compact than glass or rubber.
- **More compact installations.** With smaller dimensions for a given capacity, C & D's take up less battery room space.
- **Easier maintenance.** Patented Post Seal eliminates acid creepage.
- **Lower costs.** Light plastic case reduces shipping costs . . . total in-place costs.

These plus many other benefits mean that in the telephone field, C & D is—

**Your better battery buy!**

*Literature available*

Write for complete description and specification in C & D PlastiCell Bulletin T-527

**C&D BATTERIES, INC.**

*of Conshohocken, Pa.*

SINCE 1906

SALES AND SERVICE OFFICES IN PRINCIPAL CITIES FROM COAST TO COAST

into the position "Advance" the low-pressure air accumulator activates the two rams of the press and inserts the "tapered-heated" billets into the containers.

The advance of the rams energizes through interlocks the opening of the clamps of the swinging arms which previously held the billets, returning the swinging arms to their original position.

These two push-button operations accomplish the automatic transfer of billets from the loading tables of the induction furnaces into the containers of the press. The predetermined sequence of individual operations in this cycle is assured by interlocking controls.

Billets can also be advanced and charged by manually-operated remote controls; in this case, too, the various interlocks will prevent setting into motion any operation not in proper sequence which could cause interference and damage the equipment.

The high pressure accumulator can be actuated to "upset" the billets only after the hydraulically operated swinging arms have been moved outwards. By turning the servomechanism control at the master control station from "Advance" to "Upsetting" both rams are moved quickly by the high-pressure accumulator.

The pressure for "upsetting" is controlled by relief valves in such a manner that the billets are tightly compressed in the containers between the rams and the aluminum butts left in the containers from the previous charge, without actually starting extrusion of cable sheath.

The billets, which have been cooled to 400 C at the ends facing the rams while the opposite ends remain at 500 C, are "upset" conically, expanding first at the hot ends near the die block and then expanding progressively toward the cooled ends near the rams. This action causes the displacement of the air in the containers.

After upsetting the billets, which takes a matter of seconds, the servomechanism control can be turned to the "Press" position and the 31-step speed regulating control may then be operated.

About one minute before completing an extrusion cycle, the next pair of billets is released from the furnaces through push button control. The working cycle described above is then repeated. As the extrusion rams approach the end of their travel, the extrusion speed is gradually reduced until the sheathed cable is brought to a stop.

After completing the extrusion cycle, the by-pass valves of the pumps are opened and the supply of oil to the

press cylinders is stopped. The cylinders retain the high pressure which is reduced only gradually. Under this residual pressure, after the pumps are by-passed, there is still some cable sheath extruded, until an equilibrium is reached between the extrusion resistance (formation of sheath) and extrusion pressure, and only then the extrusion speed is reduced to zero.

At the point where extrusion stops, the pressure in the hydraulic cylinders is about 2,500 pounds per square inch with corresponding pressures in the die block. The full relief to zero is controlled by relief vents over a period of several seconds. During this period the "ratchet spanner" is operated to increase the spacing between the die and core die, thus increasing the wall thickness of the "bamboo ring" as well as the adjacent few inches of the sheath. This adjustment compensates for the thermal and elastic changes which occur because of the cooling of the aluminum and the drop in pressure when the extrusion comes to a halt.

After the pressure has dropped to zero, the servomechanism control is turned to the "Withdraw" position and the rams are moved back by the high-pressure accumulator. With the rams in retracted position, an interlock switch energizes the swinging of the billet loading arms into the press position. The billets are then again inserted into the containers, the loading arms swung into outward position, the billets "upset" and extrusion is resumed at a slow rate. At this point the "ratchet spanner" is operated, decreasing the spacing between the die and core die. This adjustment is made over a distance of several inches of extruded sheath and the final position of the tools is set after the hot metal has displaced the cooled metal between the die and core die.

By this die adjustment, the shrinking of the cable sheath at the "bamboo ring" section is compensated for. Shortly before completion of the extrusion cycle, the "ratchet spanner" is again actuated, increasing the spacing between the die and core die.

The successful operation of this extrusion press requires that the two extrusion rams simultaneously reach predetermined points in the containers at the end of each stroke. A control is therefore provided to synchronize and equalize the movement of the two rams to compensate for the minor differences in the volume of aluminum of the individual billets and for the minor differences in the temperature between the "tapered-heated" billets.

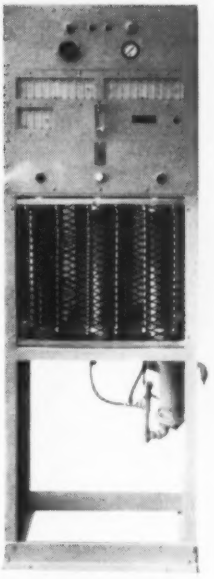
An uneven advance of the rams is shown by a magnified indicator located in the center of the press, and by ac-


**for your cable maintenance needs**

S&G MANUFACTURING CORP.

presents . . .

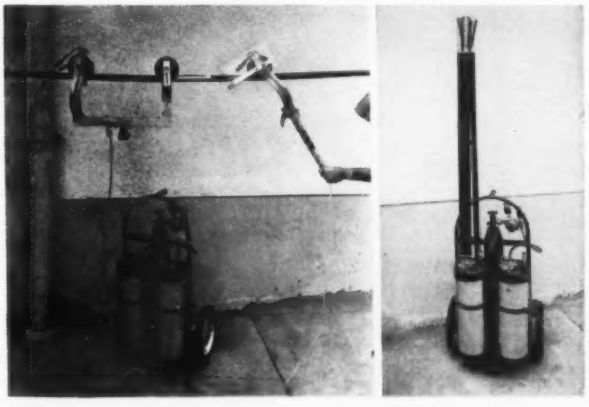
**ACD AIR COMPRESSOR DEHYDRATOR**



Exchange equipment designed to supply chemically dry air for telephone cables, aerial and underground, this unit can supply as many as 60 cables. Main feature is individual flow indicator for each cable showing volume of dry air consumed per cable per hour.

- Both Automatic and Manual Units available
- All desiccant containers are visual
- Air Purifier to eliminate oil mist
- Incorporates the latest safety devices

**LEAK DETECTOR APPLICATORS**



- Castings — aluminum for light weight
- Safety Brackets—steel galvanized
- Nozzle and Piping—brass
- Liquid Line—heavy wall plastic tubing
- Liquid Tank—steel galvanized and brass fittings
- Wheel — nylon bearings, self-lubricating

Applicators use a highly successful chemical type leak detector. Dual nozzles spray all sides of pressurized cable. Bubble cluster forms around leak within minutes and can be clearly seen from the ground. Air pressure bottle in cart supplies regulated pressure in solution tank at all times, can be adjusted for different height cables. For further information on this equipment, as well as the famous S & G Mobile Power Unit and Maintenance Generators . . .

**write or phone**

**S & G MANUFACTURING CORPORATION**
P. O. Box 1309 • New Orleans 10, La. • RAymond 3142

Pat. Pend.

*KLEIN KUT PLIERS

**for both regular and heavy-duty cutting**

It was Klein that produced the first and still the finest regular side-cutting plier. Klein also gave the industry the modern, streamlined version so much in demand.

And it's Klein again with a new, high leverage cutting plier for light- or heavy-gauge wire, including No. 2 weatherproof hard drawn solid copper wire, and A.C.S.R.

There's no extra hinging of any kind—no uncomfortable wide-spread handles—with this new Klein-Kut Plier. The offset hinge permits the extra-high leverage and operation is as smooth and easy as with any other Klein Plier. Forged from high-grade tool steel, individually fitted, tempered, adjusted and tested. Ask for No. 213-9 N.E. for streamlined pattern.

**Regular pattern available**

Same high-leverage design, but in the original Klein side-cutting pattern. Ask for No. 213-9.

*Write for free Copy of Bulletin 1054*

ASK YOUR SUPPLIER

*Trade Mark

Foreign Distributor: International Standard Electric Corp., New York

Mathias Established 1857 KLEIN & Sons Chicago, Ill., U.S.A.

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tivating the built-in equalizer, this movement is corrected and the advance of the two rams is automatically synchronized. This synchronizing action of the extrusion rams is an essential feature of this press construction.

In the foregoing discussion certain unusual developments that have contributed to the success of making this machine a practical and efficient tool for the direct extrusion of aluminum sheath on insulated electrical cables have been stressed.

The most interesting developments from the cable users' and manufacturers' point of view are:

(1) The efficient cooling system to protect the cable insulation while it is in the die block. This feature permits the extrusion at relatively high temperature and low pressures.

(2) The "ratchet spanner" arrangement for the control of sheath wall thickness.

(3) The "tapered-heating" and progressive "upsetting" of billets displacing air from the containers and preventing formation of blisters in the sheath.

(4) The synchronization and equalization control of the advance of the rams during the extrusion of the aluminum sheath.

## TROUBLE CLEARING—MAGNETO SERVICE

*Concluded from page 25*

cuit drawings. Perhaps we can be helpful in this matter by writing one or more articles on the magneto board.

In discussing the magneto system we must distinguish between the magneto exchange (having a magneto switchboard) and the magneto telephone set. The latter can be used without the former. Many common battery manual exchanges have magneto farm lines. There must be a reason.

Up to the present time we cannot connect a magneto line to an automatic switchboard; however, someone is now working on that problem. We read in "TELEPHONY'S Electronic Section" (Jan. 26, p. 19) that equipment has been invented by means of which this can be done.

The magneto telephone has some very good features. Features that are well liked by farmers, especially those living far from town. The magneto set is complete and self-contained. It has its own power for talking and ringing and, therefore, is not dependent upon a distant central office. Two such telephones connected by a wire are all ready for ringing and talking.

On the other hand, a common battery or dial telephone is completely useless if the connection to the central office is broken. In an emergency, it is often more important that a farmer call his neighbor rather than the distant city or village and his powerful five-bar generator will ring through very heavy trouble.

A common battery or automatic office has a very definite line resistance limit. Many long farm lines would exceed this limit unless large gauge copper were used for the line wire.

It is for the above reasons that inventors are seeking a way to connect a magneto line to an automatic board.

Perhaps the near future will bring forth a new type of telephone for use on farm lines. It will have all the good features of a magneto set. The farmer will be able to reach his neighbors much as he does now and he will also be able to dial through the central office and to the world beyond as far as subscriber distance dialing is extended.

## MANAGERIAL SKILLS FOR NEW AGE

*Continued from page 34*

make choices that are in their own best interests.

Businessmen cannot afford the luxury of standing quietly on the sidelines while others lead America down the "something-for-nothing" trail toward a more regimented and socialized society.

We must construct our own, more appealing vision of the future—a future which increases human dignity, human freedom, and human achievement.

Third, we need to "do right voluntarily," as one of my colleagues advocates. We can hardly expect to have either self-respect or public support if our own actions betray mean motives, shallow minds, or double standards.

I heartily resent the insults of those who imply that a businessman is, by definition, a ruthless creature, who has sold his soul for money and power. But every time one of us makes an expedient or selfish decision, we feed this antique prejudice.

If we make mistakes, as we will, let us have the grace to admit them and try to undo the damage.

Mistakes will be forgiven if the people are convinced that we are trying to follow, as Lincoln put it, "the better angels of our nature."

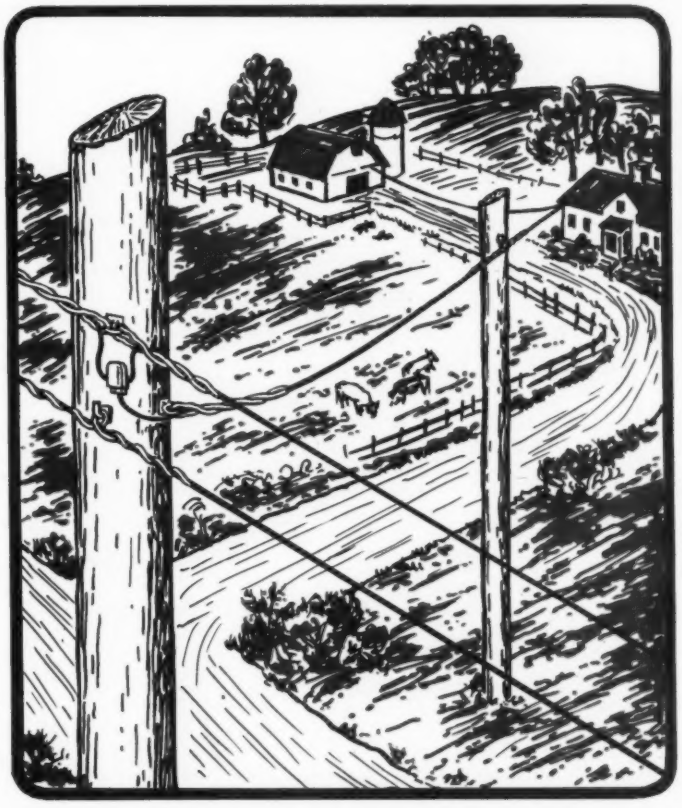


XUM

# PWC®

# RUR A LINE
TRADE MARK

## Polyethylene Insulated Line Wire



### A DEPENDABLE INSTALLATION . . .

providing rural extension service at an economical cost. PWC Rur-A-Line is easily installed like a single wire. Maintenance is less than that of open line wire.

Rur-A-Line is moisture and corrosion resistant. It offers excellent protection features with long service life.

PWC Rur-A-Line installations offer the following advantages:

- Excellent transmission characteristics
- Less noise than open line wire
- Long, dependable service life
- Minimum maintenance cost
- Can be installed in parallel with existing cables or open wire

### Rur-A-Line #214

is designed for normal span installations. Two #14 solid extra high strength copperweld conductors, 30% conductivity, are insulated in parallel. The special polyethylene insulation has excellent weathering characteristics. Colored Black.

OD=.145"x.280" 34 lbs./1000 Ft.

### Rur-A-Line #212

is designed for long span installations. Two #12 solid extra high strength copperweld conductors, 30% conductivity, are insulated in parallel with the same high molecular wt. Polyethylene insulation as used on #214.

OD=.160"x.315" 51 lbs./1000 Ft.

WRITE FOR PWC PRODUCT BULLETIN #105

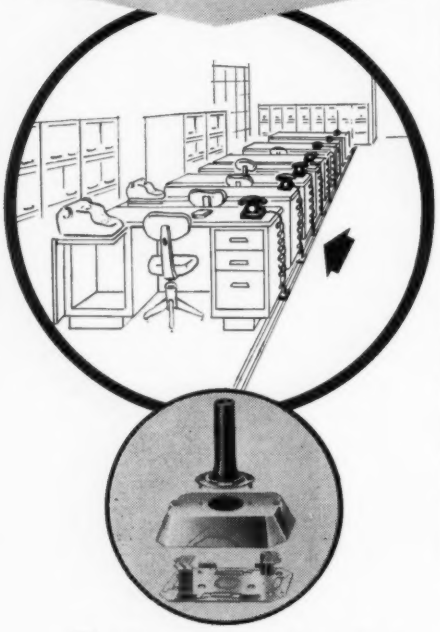
**PLASTIC WIRE & CABLE CORPORATION**

JEWETT CITY, CONN.



XUM

PANCAKE
is the
Modern Way
to carry
communications
wiring to the
*point of use!*



Pancake is the streamlined, modern method of making individual telephone connections to office desks or communication points in factories. The galvanized steel, *trip-proof* surface raceway can be quickly and economically installed with a *minimum* of interruption to office or factory routines.

Features added to the newly developed 1546T Telephone Outlet Box, *illustrated above,* provide (1) an ingress for 2600 Pancake, and (2) the "split bridge", which extends the versatility of this fitting, provides a more simple means for the installation of the 47B terminal block, and facilitates the use of the fitting for through wiring.

*Specify 1500 Pancake for IKT Conductors; 2600 for telephone cable.*

For further information write Dept. T-4

THE WIREMOLD COMPANY
HARTFORD 10, CONN.

This inward integrity is what we expect of other men, and it is what they expect of us.

### *Communicating Our Aspirations*

Fourth, we in business need to learn to communicate our convictions and aspirations.

Why do we so often remain silent while our company, or our industry, or the entire business community is subjected to irresponsible attack? Why do we allow a few noisy demagogues to turn businessman against businessman, to grab off credit for our achievements, or to undermine the very foundations of public confidence? Have we so few ideas? Have we so little to speak about? Or are we simply afraid to take them (the noisy demagogues) on in the battle of ideas?

The new responsibilities of the professional manager include the responsibility to make his opinions heard, understood, and believed in the arena of public opinion.

This responsibility is shared by other employes, but the manager must provide the leadership.

### *Becoming Politically Effective*

And finally, we in business need to learn how to be politically effective. Government is becoming a more significant factor in business decisions with every passing year.

The pressure groups that are trying to squeeze more than their share out of the proceeds of business are turning increasingly to politics. Professional managers must recognize this trend and learn how to manage their political resources with as much skill as they now manage their material and technical resources.

During the political campaign last fall, the Washington bureau of a well-known newspaper sought to develop an article on political activity by businessmen. The newspaper had already run a piece on the marvelously organized political activities of labor unions, and thought it appropriate to see if there were any equivalent operations by businessmen.

The effort was not rewarding for two reasons. First, businessmen did not seem to be doing much. And second, even the few who were active hesitated to discuss it.

Their reason for being so quiet, they said, was that they were afraid it would hurt the cause if people knew businessmen were supporting it.

In other words, business support of a cause is taken as the kiss of death. Businessmen generally keep quiet about what they believe in, for fear that by speaking out, they give aid and comfort to the enemy.

The thoroughly logical result of this situation, of course, is that politicians, who keep their ears glued to the ground, recognize the dangers of getting caught supporting or defending business. It's usually bad politics.

### *Improving the Business Climate*

Without going into the problem any further, I would say that the professional manager and his associates must set about making it good politics to be for what business is for.

This is not so much a matter of buttonholing congressmen and establishing more effective lobbies, although we businessmen have as much right to do this as others do.

More important is the grass roots work of letting our employes, our neighbors, and the public officials serving our own local area know what contributions we make to community life and prosperity, and where we stand on significant issues.

We need, in other words, to build popular support for those causes which we consider to be good for the community and the nation, so that the great majority of politicians who sincerely want to serve the best interests of their constituents will have the assurance that it is politically wise to do so.

Let us have no doubt about our right or our responsibility, as businessmen, to improve the climate in which our companies operate. Through specific action, company-by-company, we can exert a constructive influence on all the outside conditions that affect the cost and ease of operating a business in the community.

If we are successful in this, we will simultaneously increase the usefulness of the companies we manage, and improve the ability of the community to attract and hold desirable employers.

There is a whole new field to be explored in this matter of discovering and organizing the political resources of business. Perhaps in the past the manager has not felt that this was a part of his assignment. It is now.

### *Recognizing New Responsibilities*

And so as times change, the responsibilities of the manager take on increasing scope and variety. We are still vitally concerned with the profit and loss statement. But behind those results in the southeast corner of the ledger lies a mass of new factors that never had to be considered before.

Increasingly, we must recognize that there are political and social factors at work which, over the years, make it increasingly difficult for our companies to serve their customers effectively, and so earn an adequate profit.

This is true for companies large and



XUM

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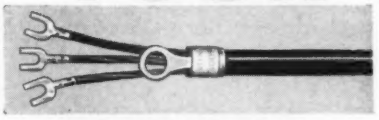
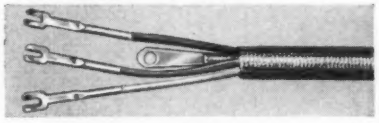


BEST

NYLON



BUY!

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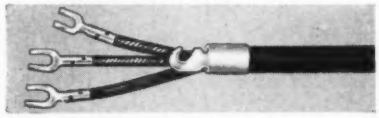

***Are you familiar with the features of these fine cords?***

**NEOPRENE** covered cords are a highly serviceable cord, extensively used in a wide variety of services. They are moisture and grease proof . . . easy to keep clean.

**NYLON** covered cords are a relatively new development in telephone cords. Their fine smooth texture makes them the preferred cords for switchboard use. They give long service. Preferred by operators because of their fast, easy handling.

**COTTON** cords are in standard use everywhere. Their fine woven wrap makes them very serviceable for all around purposes.

Take your choice—Neoprene, Nylon or Cotton. They're all high quality cords made in accordance with Runzel high standard of quality. We carry a large stock of cords for every purpose.

***Our geographical location means QUICK SERVICE.***

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**Cord and Wire Co.**
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small, because we all operate in the same business climate, and all are parts of an interdependent, though competitive, business system.

The professional manager must now recognize these new challenges and accept them as part of his total responsibility. He must see them not as an added burden, but as a fresh opportunity to make his own work and the work of his company more richly rewarding for everyone concerned.

## Illinois Bell Repairman Saves Eight in Fire

An Illinois Bell Telephone Co. repairman and PBX operators were credited with saving many lives in a $750,000 fire which swept Chicago's City Hall on Mar. 21.

Richard W. Hampton, 33, a communications serviceman for Illinois Bell, was credited with saving "eight or more" lives in the fire despite the danger from fire and heavy smoke.

The operators stayed at the 10th floor switchboard ringing offices and handling the flood of calls from relatives of city employes, newsmen and the curious.

Mr. Hampton and James F. Huppert Jr., an Illinois Bell communications serviceman, were dispatched to city hall by the night plant superintendent's office to examine telephone facilities.

Hearing that telephone operators manning the city hall switchboard were endangered, Hampton and Huppert tried to get to the 10th floor operating room through the city hall building, but were held back by the smoke. The two were separated.

Hampton found a way to the 10th floor through the adjacent County Building. Using telephone tools, he cut through a fire door between the two buildings and went into the switchboard room.

Seeing that operators were in no immediate danger, he helped operators answer the flood of calls.

Suddenly, he heard that several persons were trapped on the ninth floor. Aided by a policeman, Hampton soaked towels in water and raced to the ninth floor where he at various times led six women to safety. He then went to the eighth floor with the policeman and led two more to safety. Not satisfied, Hampton and the officer searched other floors to make certain others were not trapped. But the smoke proved too much for the Illinois Bell hero and he collapsed.

He was given oxygen and later taken to St. Luke's Hospital for treatment. He was dismissed on Mar. 22.

Hampton proved a hero in two other fires. In 1948, he received the Amer-


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**makes splices**
**waterproof**
**...from**
***inside out!***

Superior Cable's exclusive economical "Super-Splice" is a plastic splice sleeve. It is sealed at one end and comes to you filled with an insulating and waterproofing compound.*

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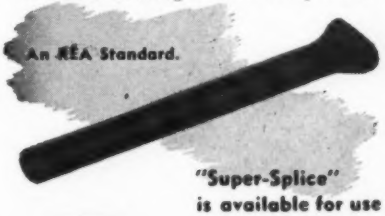
**A Dow-Corning silicone compound.*




**"Super-Splice" is available for use with straight, butt or bridge splices.**

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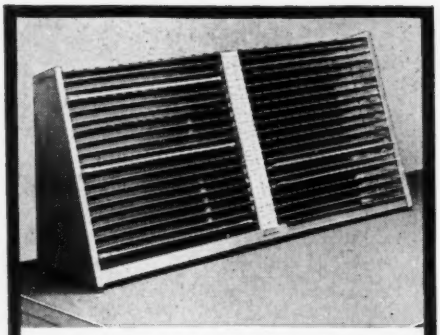


**Trouble Recorder Card Rack**

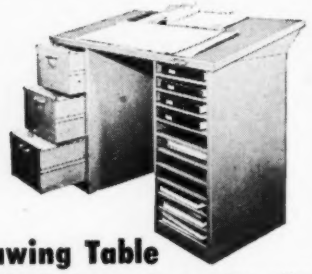
For fast orderly sorting of Trouble-Recorder cards, has 38 card slots in two banks with index strip between. Base is 38" by 8". Height 15". No. D30225-1.

**Telephone Office Equipment**

*to lighten your work and improve efficiency*

**Work Bench**

For repair, assembly, test and paper work. Top drawer divided into 24 compartments for parts and tools. Large file drawers are for circuit drawings. 54" x 25" top covered with masonite. Height 36". Drawers may be inserted from back to reverse position of kneehole. No. D29978-3.



**Drawing Table**

For circuit drawing in crossbar offices, provides central location for reference material. Masonite top is 30" x 60". Height 36" at front, 42" at rear. Three large file drawers at left for drawings. Eleven shelves at right are 2½" high, 14" wide, 18" deep for sketches, sequence charts, book type SD sheets, trunk serials, etc. No. D30326-1.

*Color of all units: Baked-on gray enamel unless otherwise specified.*

TWIN POST
Neubauer
MANUFACTURING CO.
517 LOWRY AVENUE N. E.
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**Three-time hero congratulated again on leading women to safety during a recent fire in Chicago's City Hall. Richard W. Hampton, Illinois Bell Telephone Co. communications serviceman (in bed), is congratulated by W. V. Kahler, president of Illinois Bell, in a Chicago hospital. Hampton, on telephone duty at the fire, is credited with repeatedly leading women employes to safety in smoke-filled city hall. In 1948, Hampton won an American Legion bravery award for saving two children in a fire and again in 1950 won two awards, including the Illinois Bell Vail Medal, for rescuing four adults from a blazing house. During his rescues in the latest fire, Hampton was overcome by smoke, which necessitated his being hospitalized.**

ican Legion citation for bravery when he rescued two children from a burning building. Hampton heard children screaming from a blazing home next door. He raced through the flames and brought them to safety.

On April 11, 1950, Hampton, while driving an Illinois Bell truck, noticed a house on fire. With another telephoneman, he cut wires so firemen would not be hampered. Then he heard that four people were trapped on the third floor. Hampton raced to his truck, seized a ladder and placed it to the third floor. He and his fellow-worker helped four adults to safety. For this, Hampton received Illinois Bell's Vail Medal Award and also the *Chicago American's* Eagle Award.

Mr. Hampton has been working for Illinois Bell for 11 years. He is a Red Cross disaster representative. He served in the Army Air Corps in World War II and was recalled to duty in 1950 with the 303rd Signal Service Unit, made up of Illinois Bell men.

The city hall operators who stuck to their switchboards were: Mrs. Alice Green, chief operator for 25 years; Mrs. Kitty Moore, Mrs. Naomi Ryan, Mrs. Pauline Roehr, all of Chicago.

## Canada-Ceylon Telephone

Direct telephonic communication was inaugurated recently between Canada and Ceylon. The first conversation over the lines was between the Right Hon. C. D. Howe, Canada's Minister of Trade & Commerce, and the Hon. C. A. S. Marikkar, Ceylon's Minister of Posts, Broadcasting & Information.

## Name N. C. District Manager

Louis Runkle, formerly with the Central Telephone Co. at Asheboro, N. C., has been named manager of the Hickory, N. C. district, with headquarters at Hickory.

## The March Forward

Nothing tends so much to the corruption of science as to suffer it to stagnate.—BURKE.



XUM

## Missouri Small Company Committee Reports

In the Missouri Telephone Association's General Small Company Committee report released on Mar. 26, the following items of major improvement completed during 1956, were listed along with the total number completed since the start of the program in 1953:

| Items of Improvement | Completed During 1956 | Completed Total Program to Dec. 31, 1956 |
|---|---|---|
| Accounting Records | 30 | 125 |
| Market Survey | 39 | 149 |
| Dial Conversion | 28 | 78 |
| Exchange Rate Increase | 39 | 142 |
| Financing | 23 | 81 |
| Reorganization | 20 | 69 |
| Acquisitions & Consolidations | 44 | 103 |
| Exchange Area Filings | 37 | 218 |

The committee states a marked improvement in service conditions and management operations in Missouri is now apparent. The large number of projects now under schedule for the balance of 1957 and for 1958 indicate that the program will continue at a rapid rate until all of Missouri is served with modern dependable telephone service.

The program of conversions to dial service in Missouri is still gaining momentum, the committee reports. To this date, there are 112 Independent company automatic exchanges and central offices operating in Missouri; 75 conversions are scheduled for 1957, 48 for 1958 and 25 are already scheduled for 1959 for a total of 148 additional Independent automatic exchanges. It is expected that more will be added for 1959 conversion.

Some moderation is expected as a result of rising material costs and higher interest rates. However, there is no indication that these factors will affect the program materially at least during the next two or three years, the committee decided.

Continuing attention is still being given the matter of exchange rate increases. This is particularly true in the smaller, poorly financed exchanges where the committee has been unable to initiate an over-all improvement program.

Since the program started, 142 rate cases have been approved by the Missouri Public Service Commission; 39 of these were approved in 1956. Many of these increases were obtained in connection with cut-over to automatic. The rates obtained have been substantial.

Average dial service rates in exchanges of 1,000 stations or less, which encompass most of the companies involved in the program are as follows:

| | |
|---|---|
| One-party business | $6.50 to $7.50 |
| One-party residence | 4.50 to 5.00 |
| Two-party residence | 3.75 to 4.00 |
| Four-party residence | 3.25 to 3.75 |
| Rural residence, 8 to 10-party | 3.75 to 4.25 |
| Rural business, 8 to 10-party | 5.00 to 5.50 |

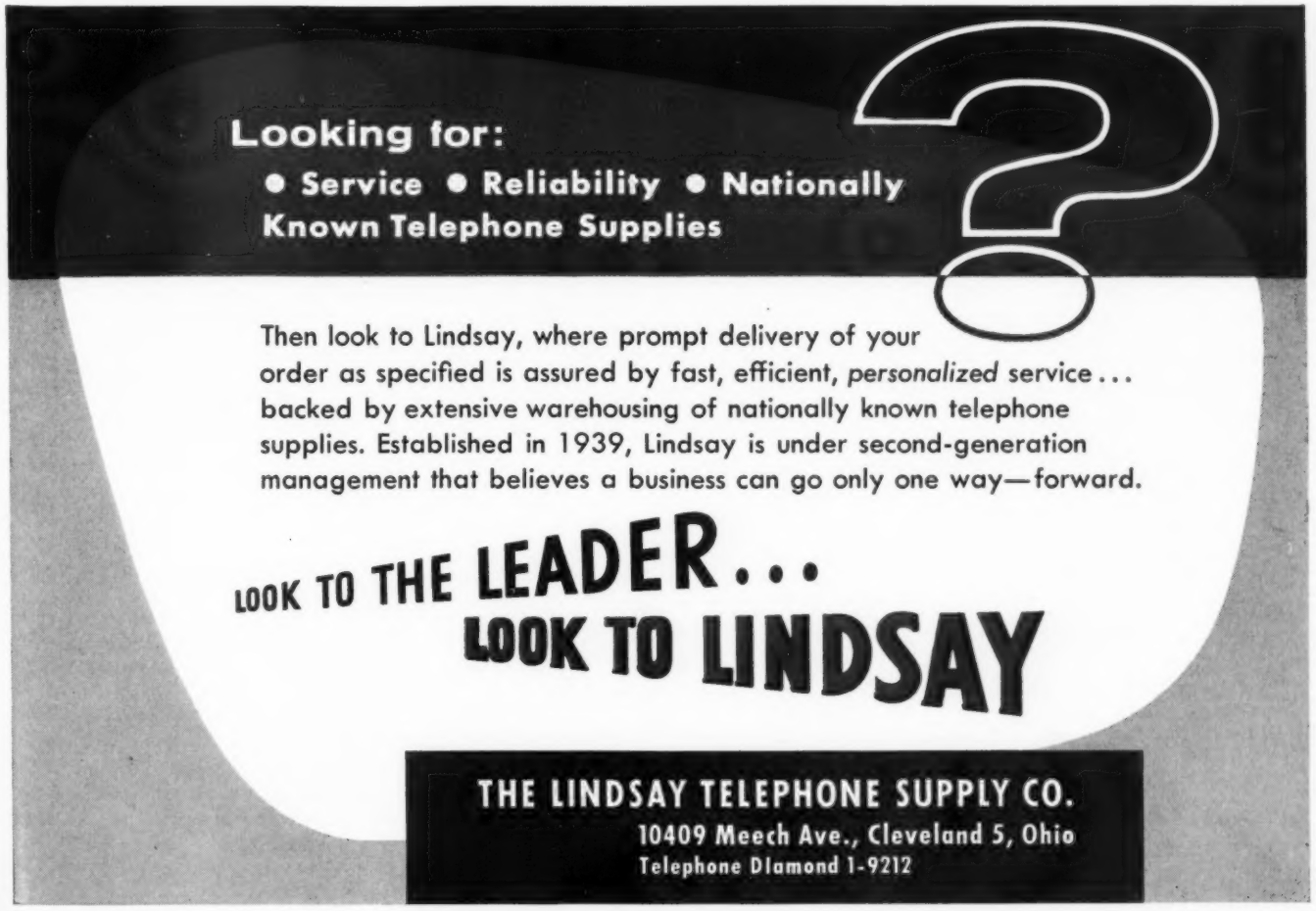
The committee states, "With rates of this type, the companies have been able to operate successfully. The efforts of the small company committees will continue to be directed toward encouraging and assisting the Independent companies in obtaining and maintaining adequate rates."

Clifford T. Davis, of Sullivan, is chairman of the Missouri General Small Company Committee.

## Richmond, Ind. Company Names General Manager

James H. Shultz became general manager of the Richmond (Ind.) Home Telephone Co., Inc., on April 1, D. C. Harlan, vice president has announced.

Mr. Shultz had been commercial manager since he joined the company in 1950.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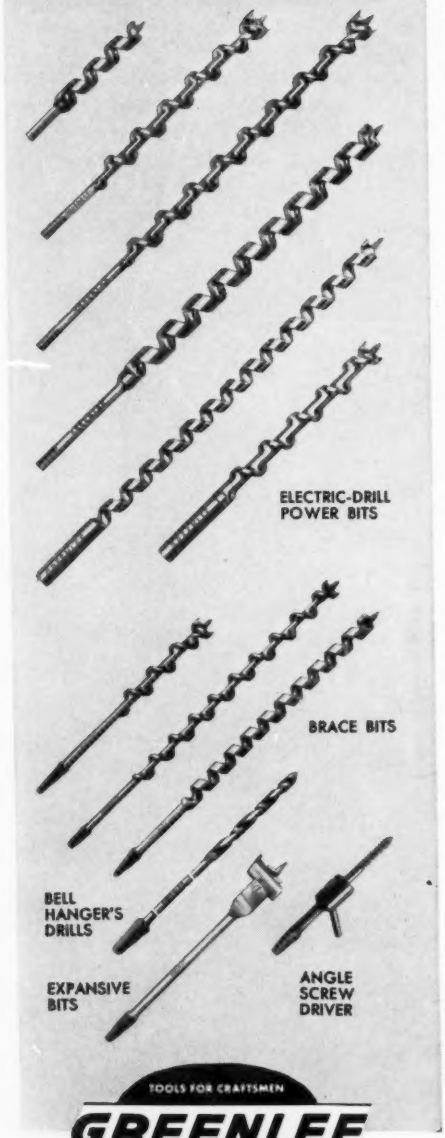
high-quality, long-lived
**BORING TOOLS**
for pole, crossarm, and timber work . . .

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## USITA Engineers' Seminar Brochures to Be Mailed

Michigan State University has announced that descriptive brochures, together with application forms, for the Engineering Conference sponsored by the United States Independent Telephone Association, to be held this summer at Lansing, Mich. will be mailed to member companies of the USITA this month.

The Kellogg Center for Continuing Education at Michigan State University has worked in association with the USITA Engineering Education Subcommittee to formulate plans and curricula for the conference to be held June 30 through July 27, 1957.

The conference was initiated at the request of the USITA and carries the complete endorsement of the association.

For obvious reasons, such a conference can best be coordinated and presented by a participating educational institution rather than by the association directly. Hence, Michigan State University was selected to perform the task. From all indications, Kellogg Center has equipped itself to fulfill the assignment in an admirable manner, the USITA states.

The Engineering Education Subcommittee is earnestly soliciting applications from all interested member companies for several reasons.

First, sufficient interest must be displayed to guarantee an adequate enrollment for the first of these annual conferences.

Secondly, widespread interest and response is necessary to assure that this conference is properly designed to meet representative needs of all the operating companies, manufacturers and suppliers composing the Independent segment of the industry.

Further, only through wholehearted participation on the part of member companies can this and similar programs be established on a recurring and permanent basis.

From the outset of organization, the USITA Sub-committee has proceeded on the premise that this conference should be designed as an engineering refresher course applicable to established engineers rather than a basic instruction course to train engineers in the art.

This philosophy has been maintained to the end that a professional approach to engineering techniques is indicated throughout the curricula and discussions. Through participation in this conference, it is anticipated that the telephone engineer will develop a keener sense of appreciation for engineering economics, fundamental planning, elements of management decision, and of the problems of tomorrow—as well as the tools of solution.

This conference might therefore be defined as one which will take a reflective view of the past in telephone engineering and suggest methods for future effectiveness.

It is impossible to indicate by title or other classification the person or persons in Independent companies who could benefit by participating in the conference.

There are no educational or experience requirements. By designing the conference broad in scope and nature, the Sub-committee planned to offer the greatest assistance to the greatest number.

The interest and support of all is solicited, the Sub-committee stated.

## J. R. Kershaw Named to Post With Michigan Bell

James R. Kershaw, extension and outside plant engineer for the Michigan Bell Telephone Co., has been named assistant chief engineer.

In his new post, Mr. Kershaw will aid Roy E. Bradstrum, chief engineer, in the administration of the largest construction program in the company's history. Service expansion and improvements totaling 101 million dollars have been set for this year.

Mr. Kershaw has been with Michigan Bell since 1930. He graduated from Penn State College in 1929.

In another engineering department move, Edward L. King, now in charge of toll plant extension, was named systems planning engineer. He will be responsible for the development of long-range plans to meet the communications needs of the future.

A graduate of Stevens Institute of Technology, Mr. King started his telephone career with New Jersey Bell in 1946, and joined Michigan Bell in 1954 from the operations and engineering department of the American Telephone & Telegraph Co. in New York.

## General of Michigan Trains Plantmen in First-Aid

As part of its safety program, General Telephone Co. of Michigan is training its plantmen in the skills of first-aid in cooperation with the Red Cross. Mr. Stanga, first-aid and water safety field representative for Michigan, is conducting an 18-hour course in first-aid instruction for 14 General Telephone Co. men who in turn will become first-aid instructors for company employes.

Coordinating the program, the company's safety training supervisor, Frank E. Johnson, stated that the program has a two-fold purpose, "We want our employes to be able to render first-aid to each other on the job, but also to be prepared to serve the public on the highways and at home."

The following telephone employes are taking the instructor course: Gordon Burgess of Richmond; Evans Parrott of Imlay City; Clarence Miller of Cass City; Milt Schmidt of Milford; Robert Galvin of Grand Ledge; and William Rich of Alma.

Also Thomas Mahalak of Alpena; Carl Steinberger of Three Rivers; Urman W. Bartholomew of Coldwater; Dale Clark of Tecumseh; Kenneth Swenson of Ludington; plus Charles Scott, Larry McRoberts and Frank Johnson of Muskegon.

## Bell Labs Announce Winners Of Graduate Fellowships

Bell Telephone Laboratories, research and development organization of the Bell System, announced on April 7 the names of 20 recipients of its 1957-58 college fellowships. Established in 1955, the grants go to outstanding students pursuing graduate studies leading to Ph.D. degrees in engineering and physical sciences.

Each fellowship carries a grant of $2,000 to the fellow and an additional $2,000 to cover tuition, fees and other costs to the institution where he elects to study.

Recipients of the fellowships may pursue various branches of mathematics, physics, chemistry and engineering. Eight of the winners this year will do advanced study in electrical engineering. Physics is the chosen field for five and physical chemistry for three. Two are graduate mathematics students, one is studying engineering mechanics and another mathematical physics. The 20 winners will study at 15 universities across the country.

## Authorizes Minn. Purchase

The Minnesota Railroad & Warehouse Commission on April 1 authorized the Central Telephone Co., La Crosse, Wis., to purchase the Orphan Telephone Co. of Balaton. The Orphan company serves some 35 stations.

## Mortality from Falls

"Falls killed 20,000 persons in 1956 —a rate of 55 persons each day. One out of every six work accidents are due to falls. About 3,000 persons are killed on the job every year because of falls." —*National Safety Council.*


THIS NEW
CHANCE
TELESCOPING TRIP AUGER
DIGS HOLES 20% FASTER

Here's a completely new, ruggedly built earth auger —especially designed for line work.

Due to the particular design of its fast cutting, high strength blades our linemen were able to dig holes 20% faster with this new auger than with the previous model.

The handle telescopes for digging deep holes. Extension rod locks at 6-inch intervals. The reamer blade can be expanded and set to bore nine sizes of holes with the same auger. A smooth working trip mechanism opens the movable blade to make dirt dumping easy.

Five models are available for digging holes from 6½ to 14⅜ inches in diameter, and from 8 to 12 feet deep.

Consult pages 6-9 in your Chance Catalog —or ask your Chance Distributor to show you this new auger.

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CONTINUING IMPROVEMENTS IN THE
*Murphy* "ONE-MAN" Cable Tester

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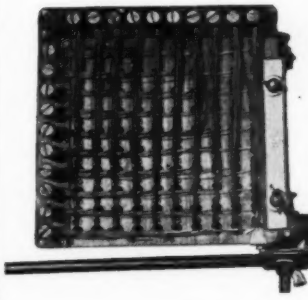

ONE MAN WORKING ALONE
Can Now Identify Non-Working Cable Pairs 3 times faster than 2 men working together.

DISTANCE:
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The *Combination Tag-and-Terminating Board*, showing cable pairs properly connected. Tips — Horizontally, RINGS—Vertically.

The NEW MODEL CMUW
The new weatherproof gasket sealed case is now a part of every MODEL C shipped.

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TEST EQUIPMENT

Locates Line Trouble FAST

DUAL ELECTROLYSIS VOLTMETER

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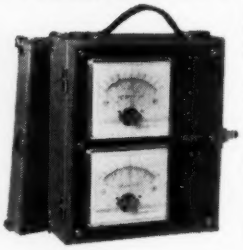

Double Meter for simultaneous readings. Zero center . . . no lead changing for fluctuating polarity.

VOLTMETER, 50,000 ohms per volt, .3 to 300 volts in seven ranges.

MILLIVOLTMETER, a low 2.5 Millivolt range . . . 2.5 to 500mv in 6 ranges.

Oak Case, 9"x10"x4½"—Wt. 6 pounds.

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LOW CONDUCTIVITY

DRY

• SAFER
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R. G. HALEY and Company, Inc.
SPITZER BLDG., TOLEDO 4, OHIO

## Rural Service Charges Continue to Advance

Payments by United States farmers for local telephone service in July 1956 averaged $3.66, or 6 per cent more than a year earlier, according to an annual survey made by the Agricultural Estimates Division of the Agricultural Marketing Service and released on Mar. 25. The Service is a division of the U. S. Department of Agriculture.

Average Monthly Local Farm Telephone Bills, By Regions, July, 1947—56*

| Region | 1947-49 Average | 1951 | 1952 | 1953 | 1954 | 1955 | 1956 |
|---|---|---|---|---|---|---|---|
| | | *Dol.* | *Dol.* | *Dol.* | *Dol.* | *Dol.* | *Dol.* |
| New England | 3.17 | 3.83 | 3.91 | 4.11 | 4.23 | 4.35 | 4.60 |
| Middle Atlantic | 2.76 | 3.24 | 3.32 | 3.39 | 3.39 | 3.50 | 3.73 |
| E.N. Central | 2.22 | 2.81 | 2.97 | 3.23 | 3.32 | 3.41 | 3.54 |
| W.N. Central | 1.81 | 2.41 | 2.59 | 2.71 | 2.75 | 2.86 | 2.99 |
| S. Atlantic | 2.58 | 3.22 | 3.48 | 3.61 | 3.75 | 3.86 | 4.07 |
| E.S. Central | 2.50 | 3.08 | 3.18 | 3.23 | 3.42 | 3.50 | 3.83 |
| W.S. Central | 2.02 | 2.63 | 2.95 | 3.25 | 3.46 | 3.64 | 3.88 |
| Mountain | 2.65 | 3.02 | 3.43 | 3.55 | 3.74 | 3.91 | 4.14 |
| Pacific | 3.08 | 3.64 | 3.82 | 4.00 | 3.93 | 4.15 | 4.27 |
| United States | 2.29 | 2.87 | 3.06 | 3.24 | 3.33 | 3.46 | 3.66 |

* The survey made in July and August requested data based on the last bill. This was generally a bill for a period ending in late June, July, or early August.

Total monthly charges for both local and long-distance service averaged $5.45 compared with $5.14 for July 1955. This increase was accompanied by continued and rapid improvement in the class of telephone service received by farmers.

Increases in average local farm telephone bills during the year ended in July 1956 occurred in all regions and in practically all states with increases fairly consistent throughout the United States.

As of July 1956, the highest bills for local telephone service were paid by farmers in the New England States, an average of $4.60, and in the Pacific and mountain regions where payments averaged $4.27 and $4.14 respectively.

The lowest by far was $2.99 in the West North Central region where there are still a large number of farmer-owned lines. Much of the regional variation in cost is a reflection of the differences in type and quality of service provided to farmers.

On July 1, 1956, about 55 per cent of the farmers with telephone service had dial telephones, 18 per cent had common battery telephones, and 27 per cent had magneto telephones. This indicates a sharp increase over the last three years in number of dial telephones on farms, and a nearly corresponding decline in number of magneto telephones.

The number of common battery telephones on farms has declined only slightly. In July 1955, about 51 per cent of the farm telephones were of the dial type while in July 1954, 45 per cent were dial. In 1954 an estimated 20 per cent of the farmers with telephones had common battery service and 35 per cent had magneto service.

Practically all of the new telephones being installed on farms (per cent of farms with telephones has increased from 38 in 1950 to 52 in 1956) are dial and many exchanges and systems have been rebuilt with automatic equipment, new poles, and lines.

Type of Telephone Service on Farms, By Regions, July 1956

| Region | Dial service | Common Battery service | Magneto service | Private line | 2 to 4 parties on line | 5 to 8 parties on line | 9 or more parties on line |
|---|---|---|---|---|---|---|---|
| | *Pct.* | *Pct.* | *Pct.* | *Pct.* | *Pct.* | *Pct.* | *Pct.* |
| New England | 76 | 13 | 11 | 10 | 42 | 38 | 10 |
| Middle Atlantic | 61 | 25 | 14 | 7 | 20 | 51 | 22 |
| E.N. Central | 51 | 16 | 33 | 2 | 14 | 46 | 38 |
| W.N. Central | 35 | 13 | 52 | 2 | 12 | 45 | 40 |
| S. Atlantic | 69 | 16 | 15 | 5 | 31 | 47 | 17 |
| E.S. Central | 65 | 25 | 10 | 4 | 32 | 59 | 5 |
| W.S. Central | 54 | 25 | 21 | 5 | 28 | 57 | 10 |
| Mountain | 57 | 30 | 13 | 5 | 24 | 46 | 25 |
| Pacific | 83 | 11 | 6 | 9 | 34 | 35 | 22 |
| United States | 55 | 18 | 27 | 4 | 22 | 48 | 26 |

## Estimates Engineer Need

"We must immediately begin to double the number of junior high school students who become scientists and engineers—and time may very well prove that we are underestimating our needs." —GLEN PERRY, *official, E. I. du Pont de Nemours & Co., Inc.*

## Gilroy, Cal. Independent Has Nationwide DDD

The Gilroy (Cal.) Telephone Co. is a good example of those Independents who have kept pace with the growing communities they serve by consistent planning for tomorrow's needs.

It became the first Independent company west of the Mississippi to provide its subscribers with nationwide Direct Distance Dialing (DDD) service, with the cut-over to Type "D" Strowger Automatic Toll Ticketing equipment, last Aug. 19. Other companies in the West, however, have had regional Direct Distance Dialing for some time.

In 1950, the company began to rebuild its plant for conversion to automatic operation with painstaking care. In July 1955, it cut into service 1,600 lines and 3,000 terminals automatic equipment, with a four-position toll board. While their central office equipment was still being manufactured, company officials began planning for Direct Distance Dialing. With the automatic toll ticketing installation, Gilroy became a full toll center.

The automatic toll ticketing system employs a checking operator, who is signalled after the desired number has been dialed into a ticketer by the calling station.

**Don H. Strahl, manager, Gilroy (Cal.) Telephone Co., and tape perforators installed for automatic toll ticketing system.**

The checking operator requests the calling station number, keys it into the ticketer, and signals the automatic sender to complete the call.

Without additional accounting machinery, the Gilroy company manually sorts and rates machine tickets and those prepared by operators.

Microfilm records of the tickets are retained and all original tickets forwarded to subscribers with their monthly statements.

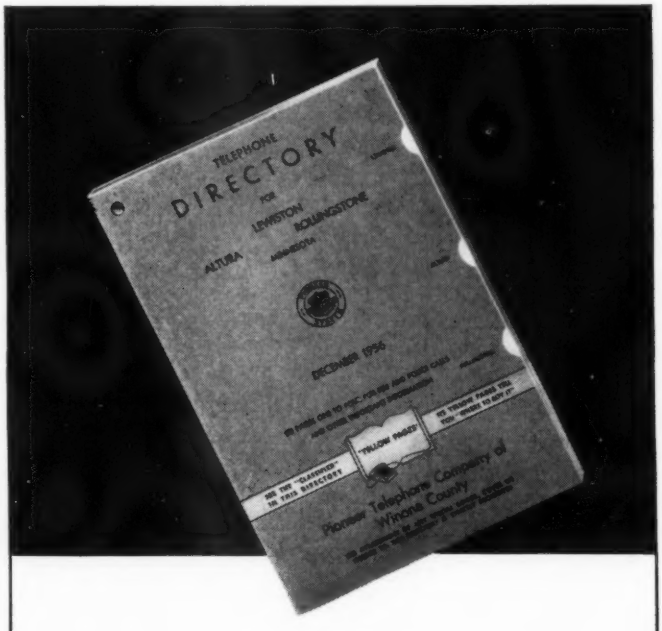
The procedure has virtually eliminated questions regarding toll billings.

The Santa Clara Valley community of Gilroy is growing both as an agricultural area and as a commercial hub for north-central California. The Gilroy Telephone Co., as always, is preparing for tomorrow. An order has already been placed for 400 lines and 600 terminals of additional central office equipment and two positions of toll board.

## Kellogg Veterans Hold 13th Annual Banquet

The Veteran Employes' Club of Kellogg Switchboard & Supply Co., a division of International Telephone & Telegraph Corp., held their 13th annual banquet at the Clearing Industrial Club in Chicago on April 3.

Highlight of the event was the presentation of 82 awards to employes with length of service ranging from 15 to 45 years. Following the dinner, Sterling Bass, comptroller and treasurer, addressed the group. Then presentations were made by department heads.


*A directory for the*

*Pioneer Telephone Co. of Winona County, Minnesota*

*printed by*

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OVERSEAS SALES:
Ericsson Corp. of New York
Automatic Electric of Canada
Pirelli of Great Britain

## BICC Wins Difficult Cable Installation Assignment

The British Transport Commission have announced the award of £290,000 contract to British Insulated Callender's Cables Ltd. (BICC) for the supply and installation of tele-communication cables on the Crewe-Manchester line as part of the British railway modernization program. This follows the recent award to the BICC group of the supply and erection contract for electrification of this line. Both audio and carrier types of cable are included in the installation, together with distribution cabinets and trackside telephone cabinets.

Severe problems are set for the telephone cable designer by the presence of a 25 kv alternating current traction system running in close proximity to telephone cables throughout their length. In conventional cables the voltages induced by high load or fault currents in the overhead traction system might be sufficiently high to cause damage to the insulation of the cable and connected apparatus, or to endanger the lives of people using the railway telephone system.

It is therefore necessary to provide heavy screening to keep the induced voltage on the cables within safe limits. BICC has developed for this purpose special cables having aluminum sheaths of sufficient thickness to give a low longitudinal resistance, and provided with a multiple steel tape armour of selected material to raise the external sheath impedance.

The grounding of the cable sheaths is of utmost importance in ensuring the effectiveness of the screening, and the BICC system of deep-driven grounding rods is eminently suited to provide grounding points of low resistance at regular intervals, the company states.

It is of paramount importance that both the steel tapes and the aluminum sheath should be securely protected against corrosion, both from earth currents and local soil conditions because of their vital importance for screening purposes. Very careful attention has therefore been paid to the protective serving which is applied over the steel tapes, this being the patent PVC-and-rubber-sandwich type which the company introduced some time ago for use on power cables.

The company goes on to say that in this connection the company's wide experience of resolving corrosion problems has been of great value and it may be said that these cables are as well protected as any yet supplied to British railways.

A point of interest is that the security of the protective serving is tested by applying a voltage of 10 kv between the steel tapes and the coating of graphite with which the cable is finished; this means that a final test can be made after the cables have actually been laid so that the state of the serving need not be in doubt.

## Bakelite Appoints Manager, Extrusion Materials

M. M. Suba has been appointed manager, extrusion materials division of Bakelite Co., a division of Union Carbide & Carbon Corp., it is announced by J. D. Benedito, vice president in charge of sales.

Mr. Suba will be responsible for the sales of Bakelite extrusion compounds, including vinyls, polyethylene and polystyrene, for wire and cable jacketing and insulation, as well as other uses.

A graduate of Rutgers University, Mr. Suba joined the company in 1933 and was previously assigned to the Hartford office as a technical representative for the extrusion materials division.

## Challenging Problems

"There are problems that cut through the lines of nation, state and local district: public vs. private power, highways, schools. They are all involved in the conflict between a superstate and local autonomy. They are a challenge, too; a challenge to our self-reliance, independence and personal integrity." —Petaluma, Cal., *Argus-Courier*.

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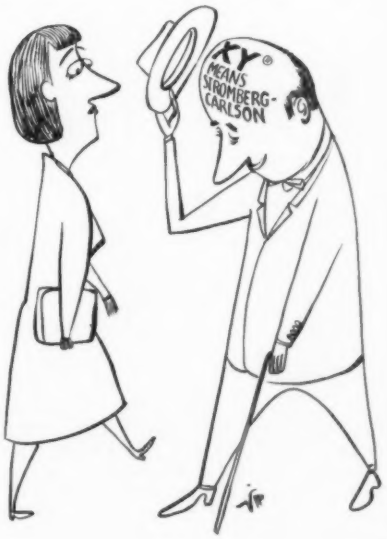

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**Classified advertisements must reach us 8 days before publication date.**

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MANAGER for expanding telephone company in South Central Kansas. Address all communications to South Central Telephone Association, Medicine Lodge, Kans.

ALL AROUND MAN to manage, etc., plant with 400 stations (magneto). Good salary for right man. Write to K. O. Shoots, Cawker City Mutual Telephone Co., Cawker City, Kans.

PLANT ENGINEERS for large Independent Telephone Company. Some experience necessary. In reply state age, educational and employment history. Address reply to Personnel Supervisor, Rochester Telephone Corporation, 10 Franklin Street, Rochester 4, N. Y.

WANTED: Appraisal Engineer capable of supervising crews with knowledge of automatic central office equipment. Permanent. Will be located in Ohio. Write Box No. 3958, c/o TELEPHONY.

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**STATION INSTALLERS**
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WANTED SWITCHMEN. Must be experienced with A. E. step-by-step equipment. New equipment, new building. Write direct to Southeast Nebraska Telephone Company, Falls City, Nebr., or, call 3111.

CABLE SPLICERS, Station Installers, Equipment Installers, Linemen. Experienced men needed. Steady work, good pay. Henkels & McCoy, 1211 Kenmore Avenue, Elkhart, Indiana, or 6100 N. 20th St., Philadelphia, Pa.

WANTED: Telephone Installers, Cable Splicers, Linemen, Central Office Installers. Yates Construction Company, 1507 South 6th St., Paducah, Kentucky. Telephone 2-4623.

MANAGER WANTED for Rural Telephone System located in Shelby County, Iowa, consisting of about 1200 stations. Must have administrative ability to achieve and maintain efficient operations and develop sound expansion programs, ability to hire, train and direct personnel in all phases of telephone operations. Technical, plant and commercial knowledge and experience desired. Permanent position carrying substantial opportunity for qualified person. Replies confidential. Please write Farmers Mutual Co-op Telephone Co., Harlan, Ia., and request application form.

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Combination telephone man would like job with telephone company of 500 to 800 stations. Age 37, 16 years experience in construction, installing and maintenance with Magneto, Common Battery and Dial. Capable of converting exchange to dial. Prefer Middlewest (Iowa or Nebraska). Not interested in exchanges connected with R.E.A.! Write Box 241, Wyoming, Ia.

RELIABLE YOUNG MAN, 12 years experience in construction of aerial and underground plant, six years as line foreman and inspector, desires permanent location with telephone company or contractor. Age 28. Write Box No. 3961, c/o TELEPHONY.

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A. E. RINGERS No. 56441-A, Straight Line, 1400 Ohm. Fit No. 40 Monophones Ext. W/Gongs @ $1.00 each. Less Gongs @ 75c each.
LOUD BELLS, SINGLE STROKE, 6-8-10-inch Gong. 115-Volt—60 Cycle @ $5.00 each.
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**—will split up—**

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# BD 110 (Signal Corps) Switchboard

**Similar in circuit to #12 W.E., built by W.E. in portable form for quick set-up to MDF & power cabinet. One position or multiple, fully wired and equipped 60 CB lines—120 CB multiple 20 LB Drops—40 LB multiple—LB & CB trunks.**

**Complete with MDF (equipped 100 W.E. C-50 protectors) with portable jack-in cables for connecting to swbd.**

**4 positions only, with MDF, ready for service, $1000, each.**

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**Smaller boards of above type, Stromberg-Carlson, A.E., W.E. 20 LB lines, 37 to 40 CB lines—non-multiple. $500 up**

**These boards are ideal for exchanges ready for dial conversion or they make good permanent installations.**

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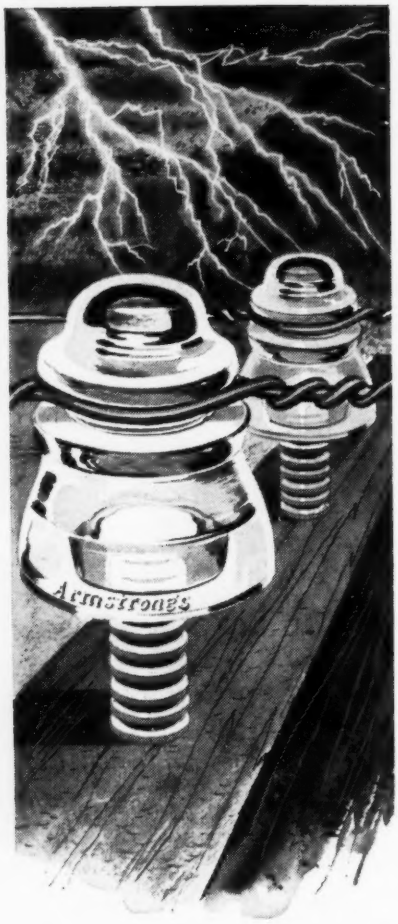


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*for communications . . . for power*


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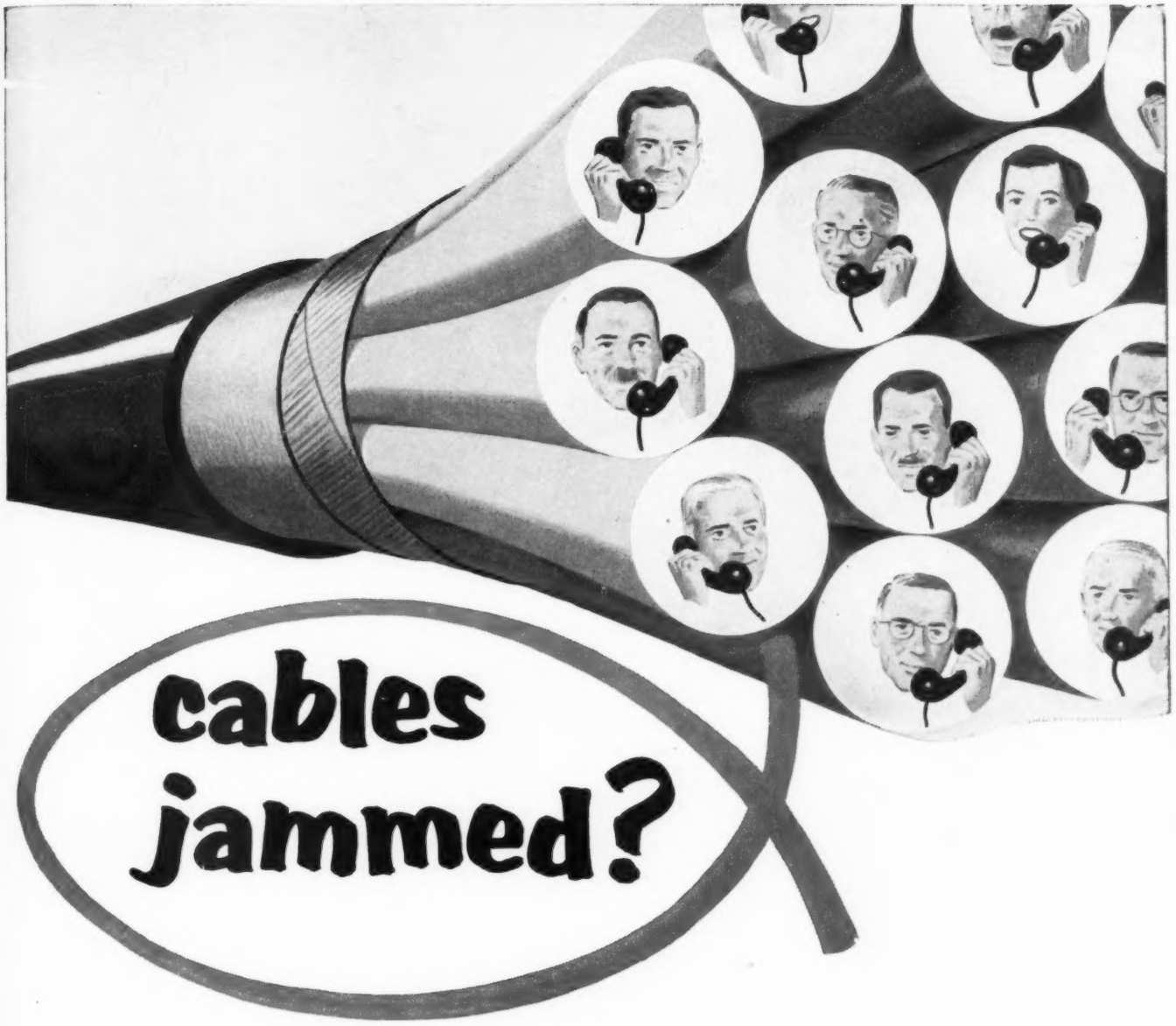

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